

RECOGNITION

JOURNAL



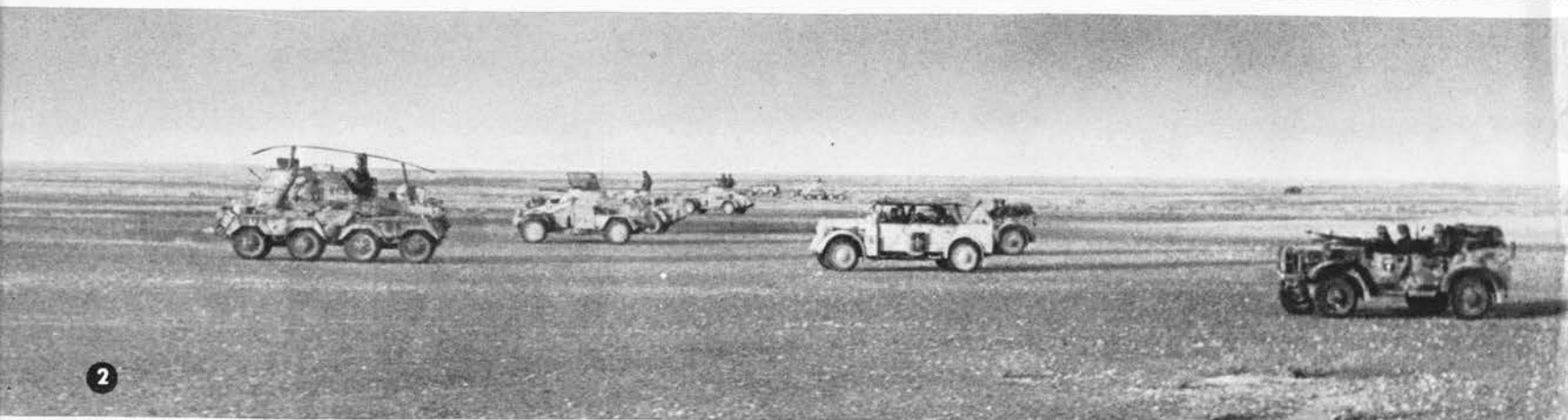
ARTILLERY SPOTTING

~~RESTRICTED~~
SEPTEMBER, 1944
NUMBER 13

WAR DEPT.
NAVY DEPT



QUIZ NO. 1: VEHICLES AT THE FRONT



RECOGNITION JOURNAL

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PROTOTYPE OF THE NAVY'S NEW PV-2 ("HARPOON") SERIES SOARS OVER WESTERN MOUNTAINS. SIMILAR TO PV-1, PV-2 HAS GREATER SPAN

INNOVATIONS WAR'S DEMANDS BRING CONSTANT CHANGES IN BATTLE EQUIPMENT

In the affairs of war, change is the only constant factor. The ships, tanks or airplanes with which we fight today will be obsolete tomorrow. Yesterday's equipment has fallen from use or evolved into the strikingly different craft we now fight with. If the study of recognition was not fully justified by the need to train the streams of new men flowing into the armed services, our endlessly evolving matériel would make it a wartime must.

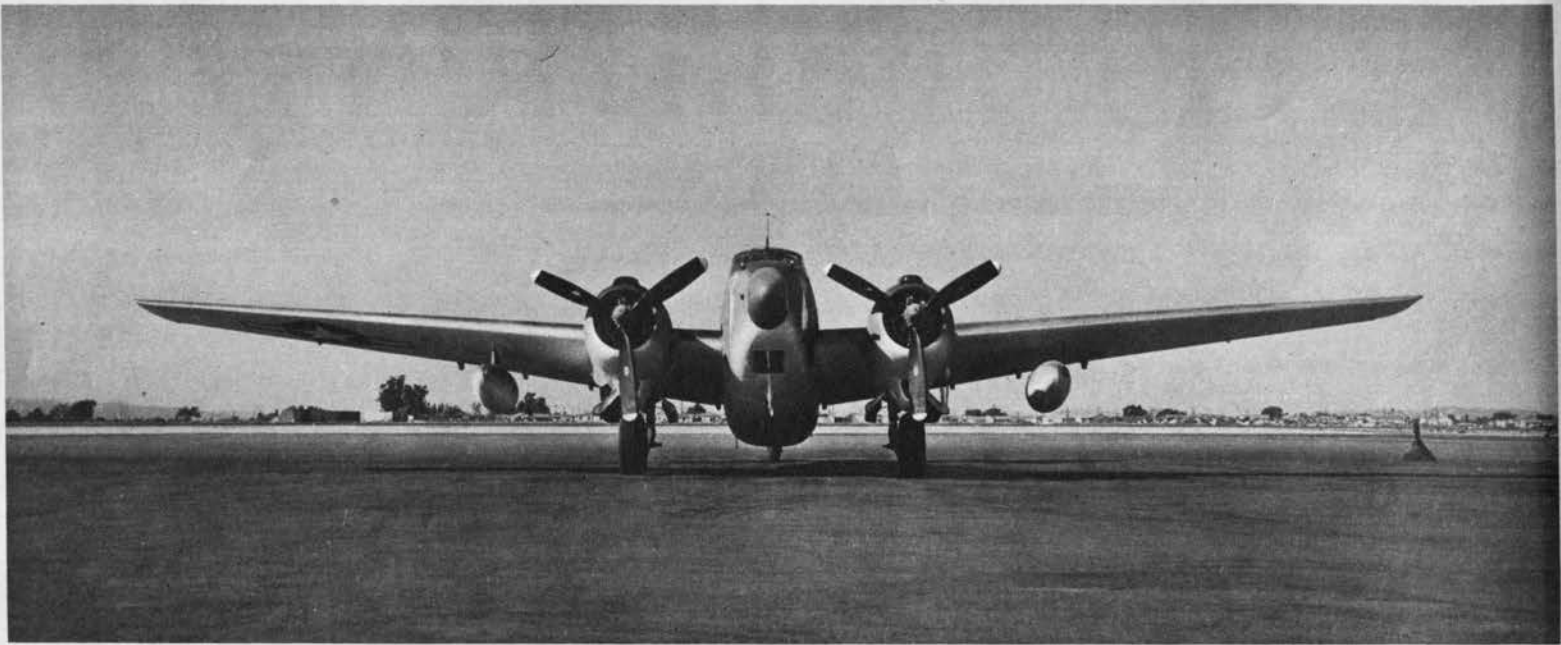
For the past several months the *Journal* has been devoting its opening pages to this important aspect of recognition. This month we are presenting the Navy's new medium bomber—the PV-2—, a new transport—the Liberator Liner—, three Jap planes, new and altered landing craft and an assemblage of varied equipment which has been illustrated poorly or not at all.

On this and the following page are the first pictures of the PV-2, the silhouette of which appeared last month. This is the latest of a series of fine warplanes stemming from a prewar

transport, the Lockheed 14. In the family are such planes as the rugged old Hudson, a stand-by of the battle of Britain, the Army's A-28, A-29, B-34 and C-60 and the PV-2's immediate predecessor, the PV-1.

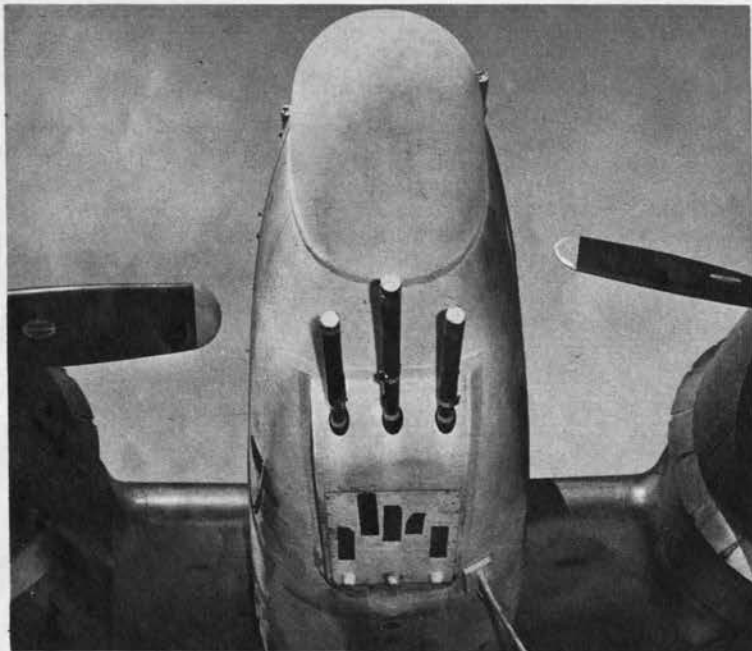
The improvement on the PV-1 extends throughout the new plane. Greater maneuverability has been obtained by rounding the wingtips more sharply and adding 9½ ft. to the wingspread; greater range by increased protected fuel capacity, greater stability and lighter controls from a newly designed tail assembly. Armament has been increased by the addition of five 50-cal. fixed guns in the nose. An enlarged, bulging bomb bay facilitates bomb loading and has also made possible the internal stowage of one torpedo.

The first 30 airplanes constructed will not carry full military equipment but will be used for training. They will be designated PV-2C. The PV-2D model will mount much heavier armament.

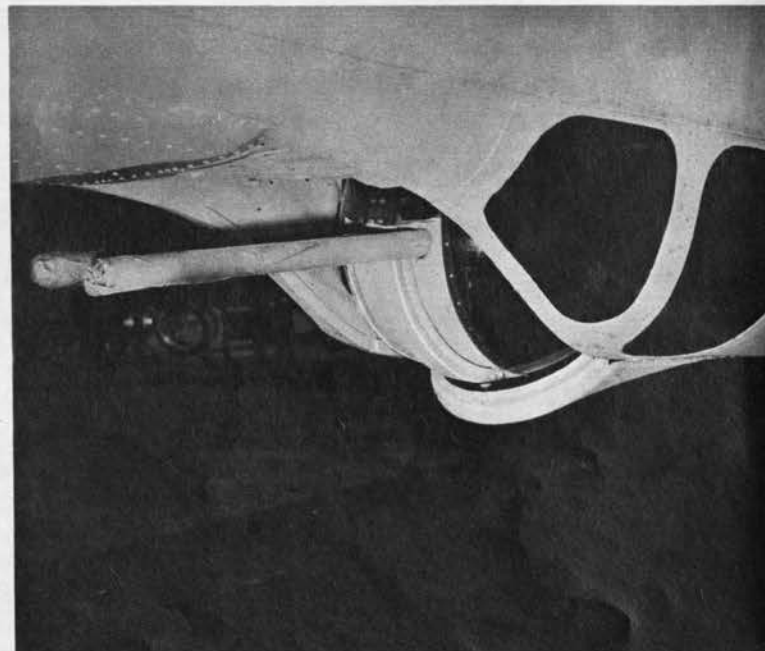


Long tapered wing of the PV-2 sweeps out from a mid-position on its square bulky fuselage. Fat radial nacelles are centrally mounted

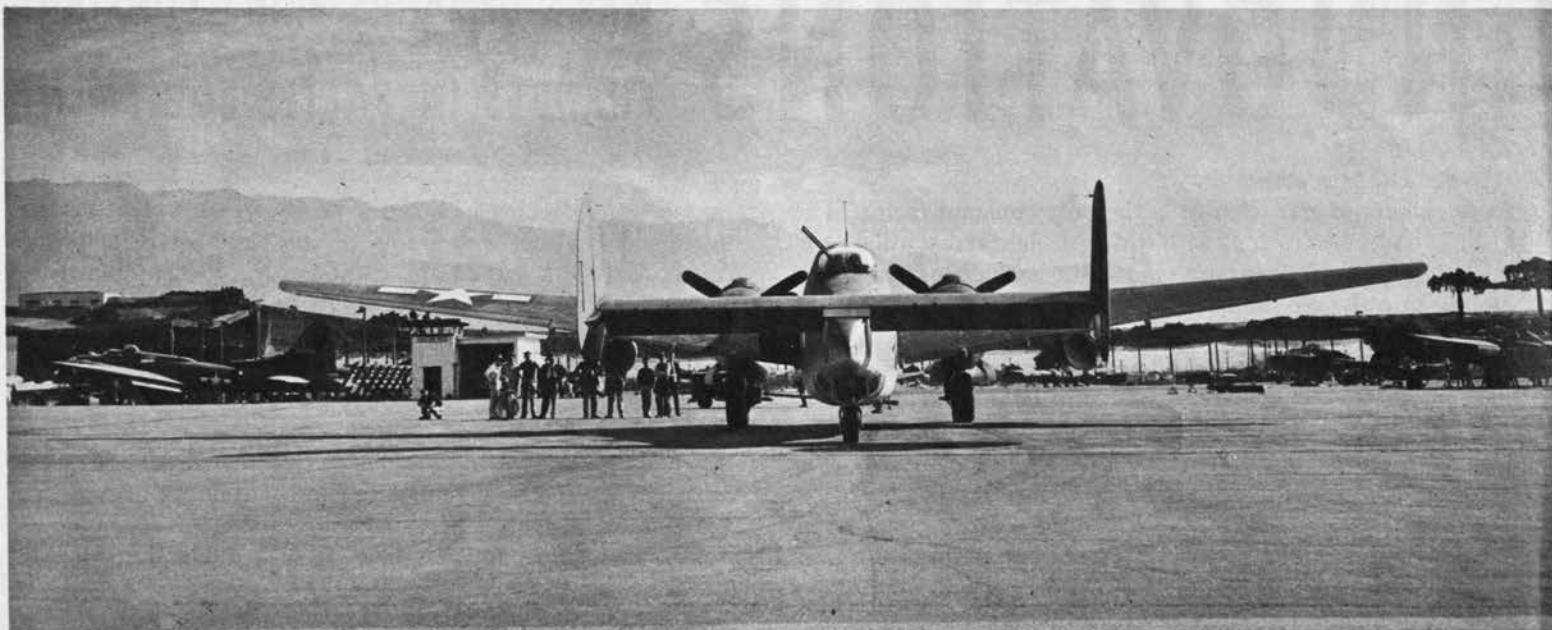
and set close to the wing roots. Three-gun package under the nose shown below had not been installed at the time this picture was taken.



Nose armament of the PV-2 consists of five 50-cal. machine guns fixed to fire forward. The PV-2D will be equipped with more guns.



Belly armament on PV-2 consists of twin 50-cal. power turret which makes larger bulge than hand-operated twin .30's on its predecessor.



Fins of PV-2 are more rounded than those of the older PV-1. Fins and rudders rise flush with tailplane ends. The Harpoon's top gun tur-

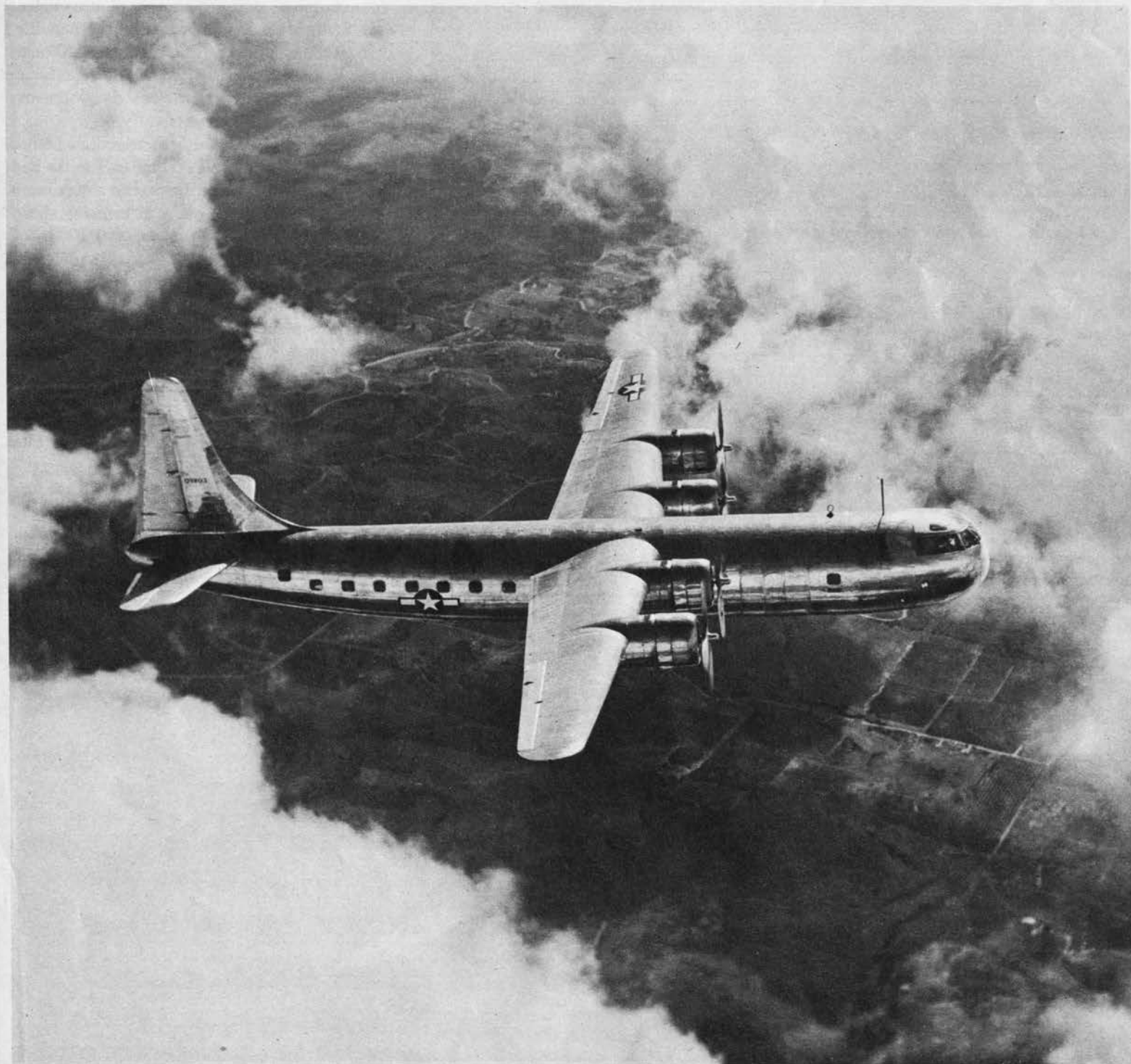
ret is carried over intact from the PV-1 design and has a wide rearward field of fire between patrol bomber's widespread tail surfaces.

ARMY'S FAMED LIBERATOR SIRENS LUXURY AIRLINER

The wing and engines of the USAAF's B-24 have recently been adapted to carry and power the newest American transport plane, the Liberator Liner. This new plane is designed as a luxurious day or night passenger carrier having either club-car or sleeping-car accommodations. Its fuselage, which more closely resembles B-29 than B-24, is a long tubular structure which juts far forward and extends aft to a tall, square-cut fin and rudder so that the plane seems to balance on the long thin Davis wing. No planes of this type will be built for civilian use until after the war; all current construction is for the Army.



Pilot's enclosure forms slight bulge on the liner's long rounded nose as graceful Davis wing suspends its heavy, awkward-looking fuselage.



Striking contrast between the light wing and the huge fuselage is a tribute to the aerodynamic quality of the Davis design. New single

fin replaces the familiar twin platters of the B-24 and indicates the current trend in heavy superbombers. Big deep nacelles are underslung.

NEW JAP PLANES HIT BY U. S. GUNS


Three Jap planes that are playing a prominent part in Jap air war are the familiar Betty, Jake and the new Frances (Y-20). Although Jake is an old stand-by, pictures of it have been rare up to now. On these two pages are good shots of both a Betty and a Frances being shot down, while on the following page Jake is being downed by a pursuing F6F.

New power turret atop the familiar Betty adds a feature not before seen on Jap planes. Although other changes have been made on Betty, chiefly the addition of rounded wing and tailplane tips, elimination of gun blisters in favor of flush side openings, the new turret is the chief recognition feature. Although the *Journal* has presented the new Betty before, better pictures of the new developments make repetition advisable.

Betty is now slightly heavier than before because of added self-sealing fuel tanks and increased armament. She carries a maximum load of four 550-lb. bombs at cruising speed of 215 m.p.h. Betty's range with 1,100 lb. of bombs is 2,500 miles. A good silhouette of the new Betty can be found on page 11.

On the opposite page are three views of the new plane, Frances, which show its resemblance to Betty. It has often been mistaken for Irving but can be distinguished from Irving by its tail and greenhouse. Frances does not have Irving's prominent broken greenhouse and Irving does not come to a point at the tail.

Pictures of Jake shown on page 8 are first available flying pictures of this plane. Jake is large twin-float monoplane used chiefly for reconnaissance and occasional light bombing.



Jap Betty goes down in flames. Fire streaming from fuel tank marks the vulnerability of unprotected wing tanks. New turret is barely visible but makes definite recognition easier.



Betty's power turret and thicker fuselage readily set it apart from the new Frances. Betty carries maximum load of 2,200 lb. and has maxi-

mum range of 3,220 miles without bomb load. Normal bomb load is 1,584 lb., with which Betty will travel 2,110 miles at speed of 205 m.p.h.

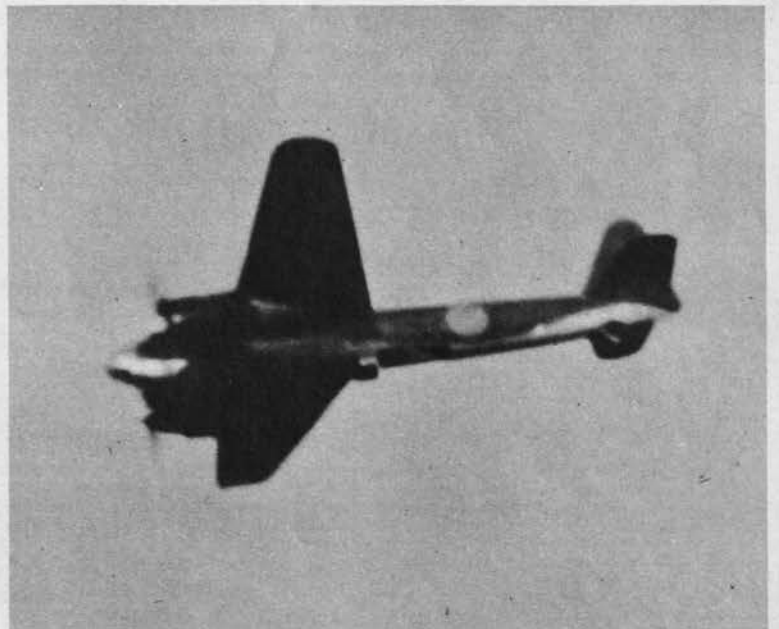


Shot-up Frances dives in flames. Comparison of this shot with that of flaming Betty illustrates possibility of confusion. Frances' tail and

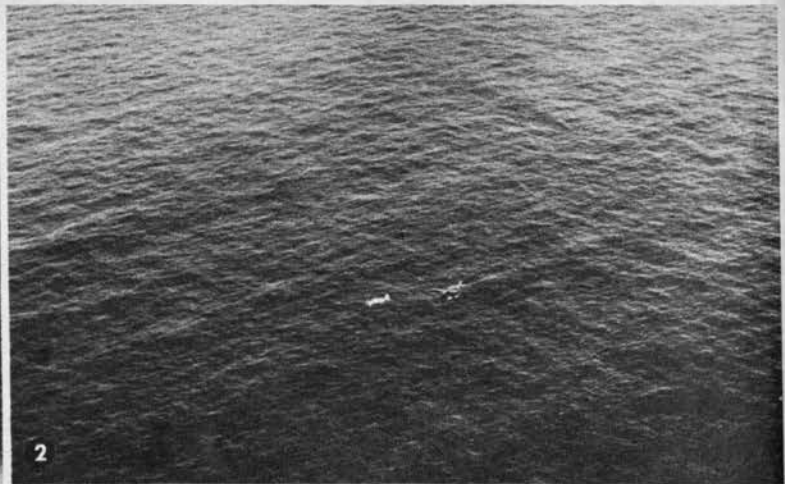
wing design is typical of Japanese planes and helps in identifying it. Frances is designed to operate at long range with a light bomb load.



Frances' tail comes to a point, thus distinguishing the plane from Irving whose tail tapers gently. Its wingspan has only slight dihedral.

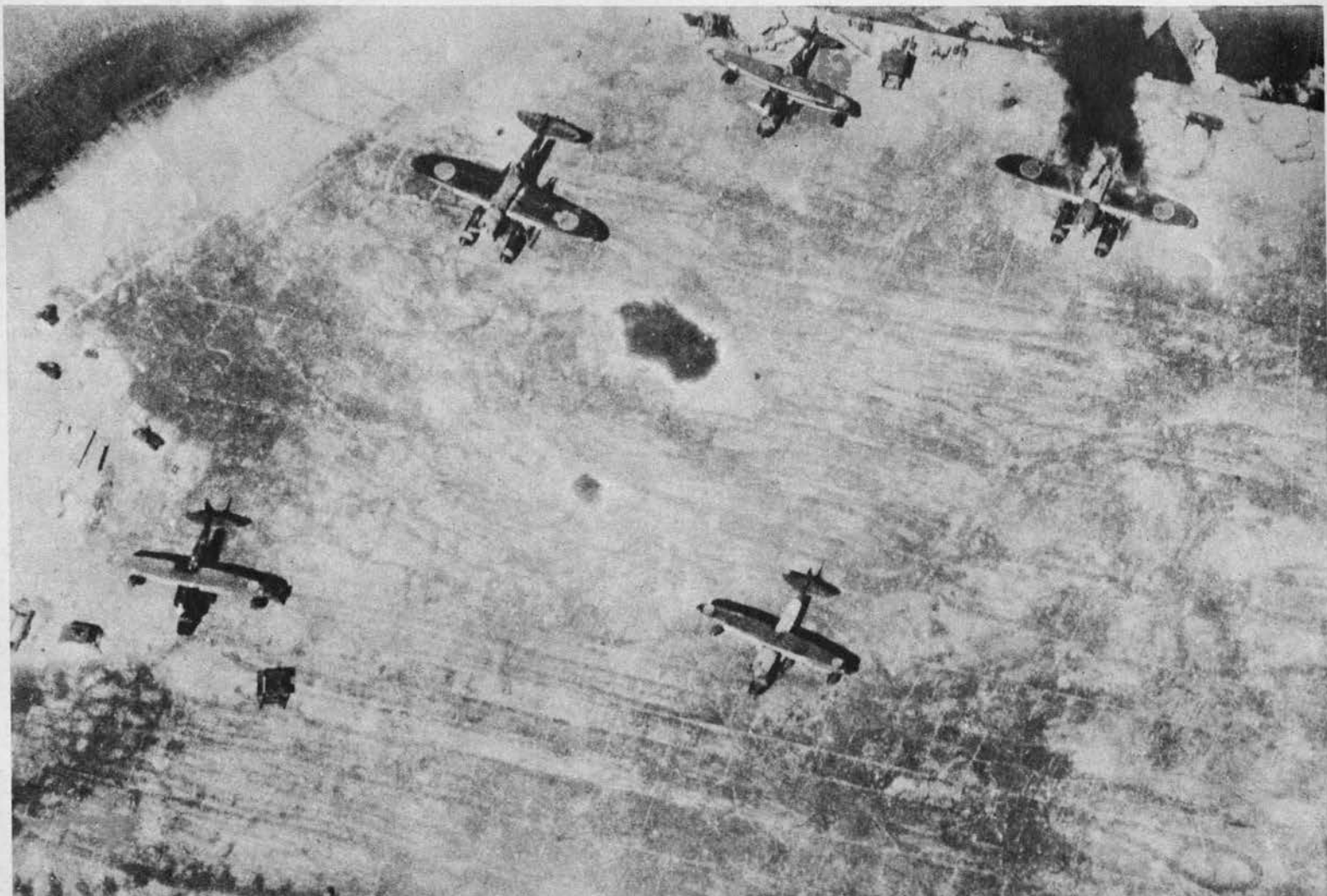


Side-angle view of Frances shows long, symmetrical fuselage, rudder with swept-forward trailing edge. Frances is latest Jap attack bomber.



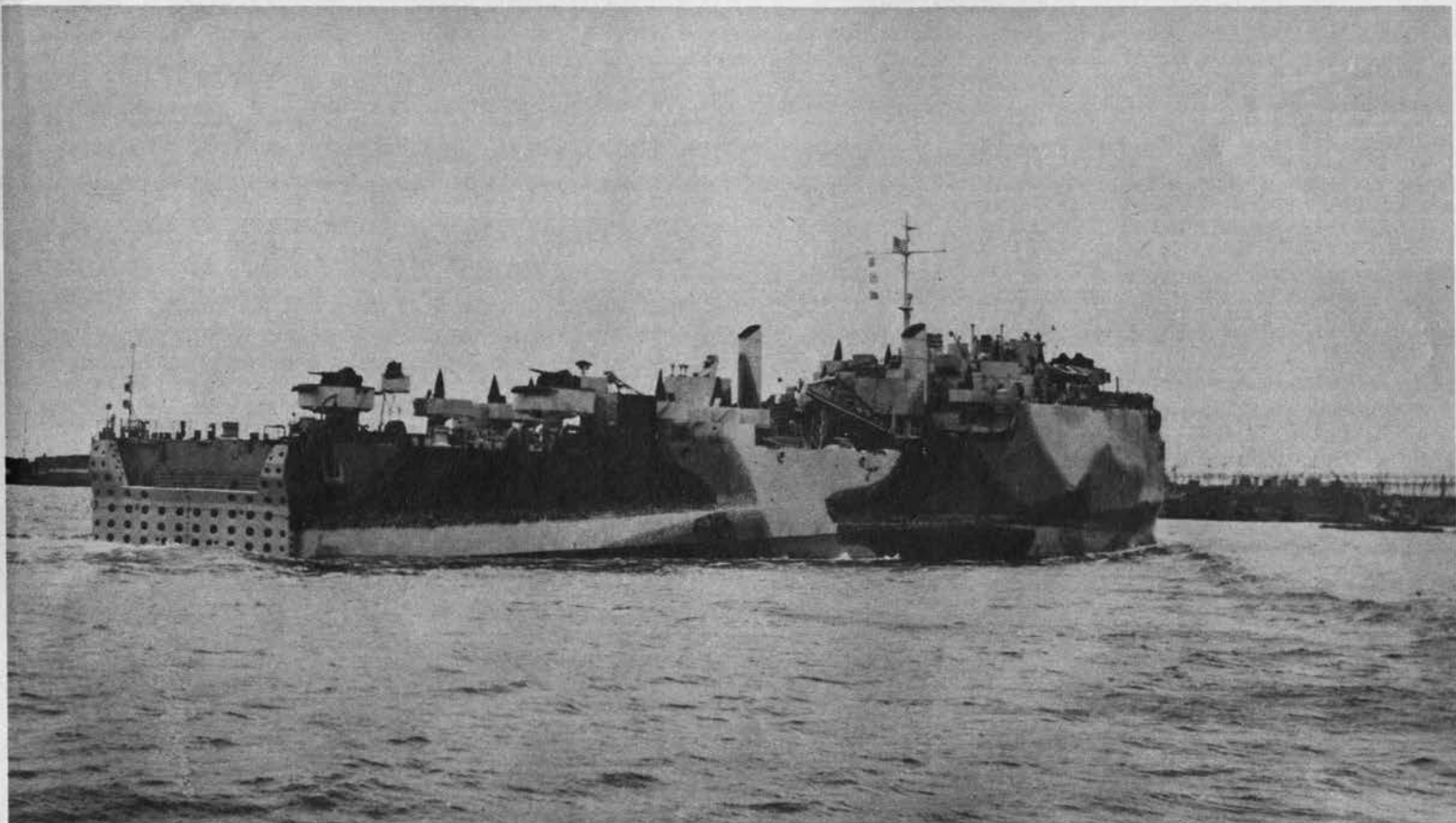
Japanese Jake is pursued and downed by Hellcat. First two frames show F6F overtaking Jake and passing it after scoring hits. Jake then

crashes. Jake is low-wing recco divebomber with twin floats. Its fuselage is oval-shaped, tapers to a cone in the rear. The stabilizer is curved.



Familiar Jake burns after attack by American planes on Truk. The plane to the left of the picture is also a Jake while the other three

planes are Petes. Both of these types of floatplanes are used primarily for reconnaissance duty but Jake is occasionally used as a divebomber.



LSD, latest landing ship, differs from former model in its new stern development. The old stern was solid and squared completely across,

while this latest cuts downward and has symmetrical holes in it. Both of these craft were first used in the Pacific, later in Normandy landings.

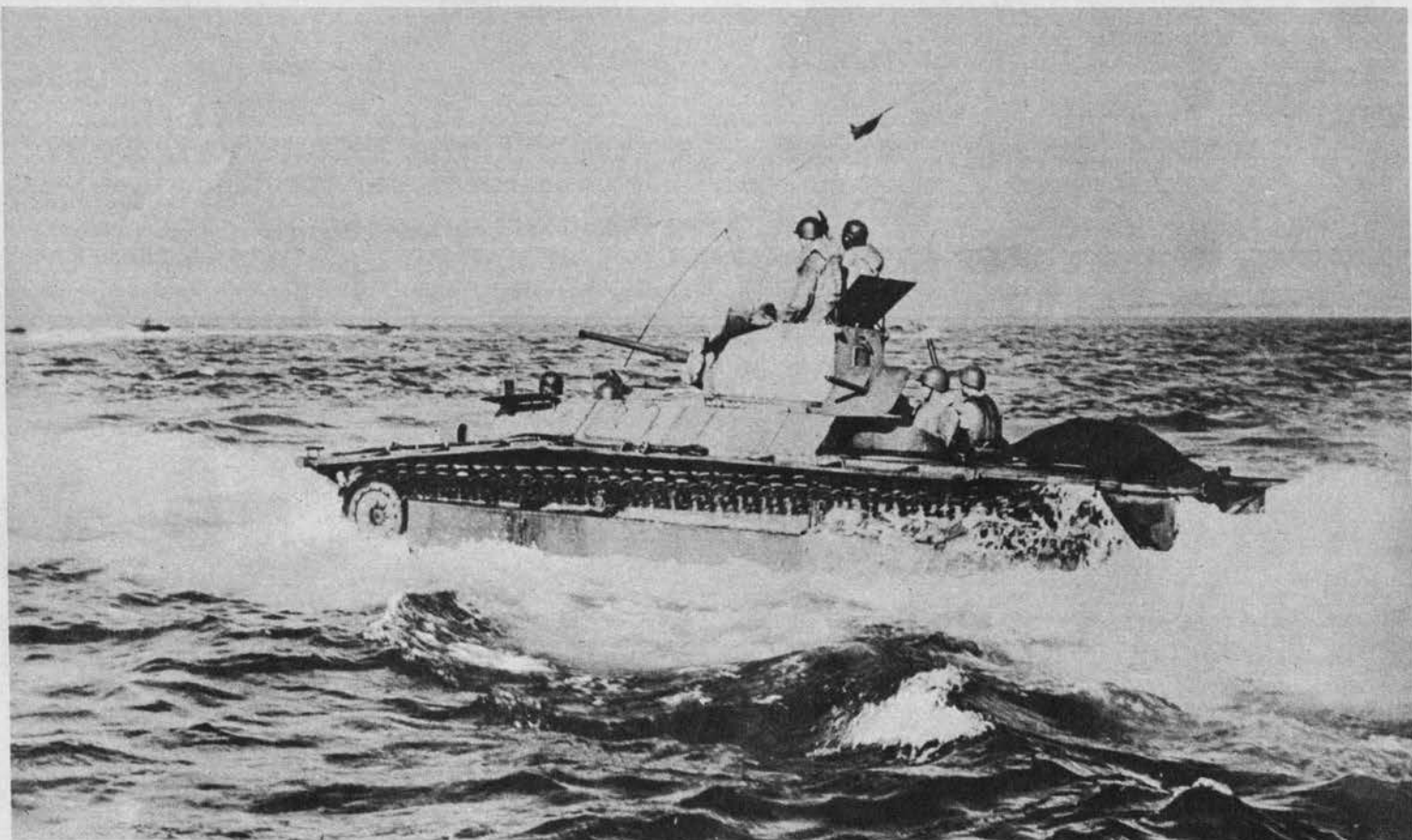
LATEST DEVELOPMENTS IN U.S. LANDING CRAFT TYPES

These landing ships are latest variations of two Navy newcomers. Easily recognized Landing Ship, Dock (*above*) is doing auxiliary work as a tender in restoring Cherbourg harbor. The new LCI(L) (*below*) is simply an improved version of the old LCI. It has no side ramps and debarks its personnel through a new bow door like that of an LST. This method of discharging troops is much simpler.



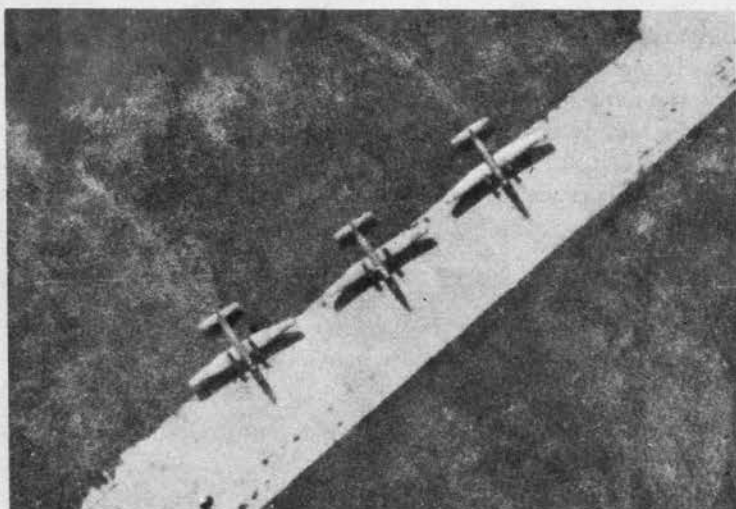
Recognition features of LCI(L) are easily seen here. Rounded bridge shows craft to be a newer model. Lack of side ramps is the conspicu-

ous difference between this and older LCI's. Freeboard is considerably higher forward and obvious when viewed side by side older model.



Plowing through surf is this LVT(A)1, a development of the LVT or Alligator. It has armor and new offensive firepower in its 37-mm.

cannon which was lacking in the earlier version. Most important recognition changes lie in the angular turret and decked-over hull.



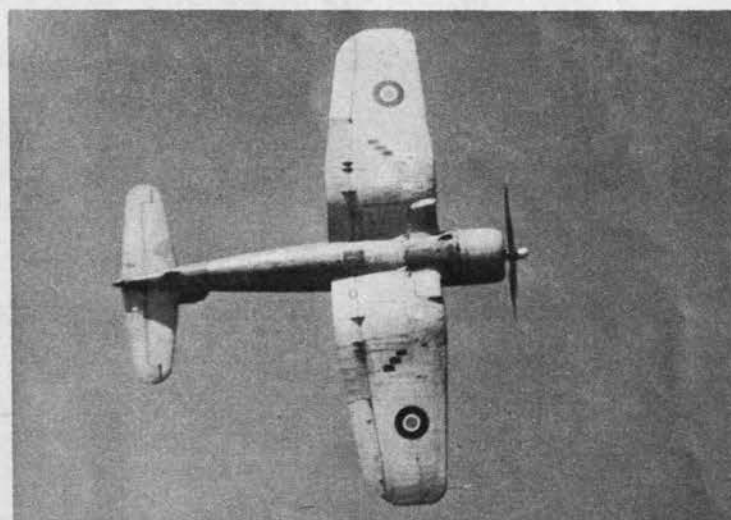
Reconnaissance photo of Ju-252 shows its long fuselage, angular wing. It is bigger than the Ju-52 and has a turret above the cabin.

A NEW LANDING VEHICLE, NEW AND CHANGED PLANES

U.S. amphibious equipment now includes vehicles which can help rake enemy beaches before storming them. One new model now used in landing operations is LVT(A)1 (above). The first photograph of a new German transport plane, Ju-252, appears at left. Its design is clearly based on that of the sturdy old Ju-52. Another Luftwaffe development is the installation of a heavy cannon in the Me-410's nose. Fleet Air Arm Corsairs (below) are now appearing with clipped wings.



Cannon in the Me-410's nose is believed to be 37-mm. Flak 18. Note the thin fuselage and short nose of this Nazi fighter-bomber.



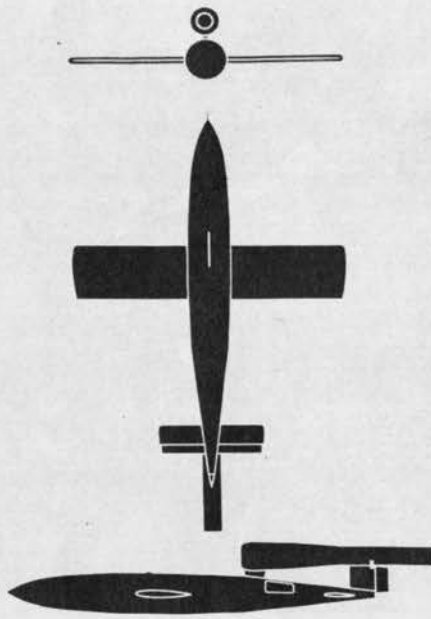
Inverted gull wing on the Corsair has blunt tips when delivered to Britain's Fleet Air Arm. The British call this version Corsair II.

NEW AND REVISED AIRPLANE SILHOUETTES



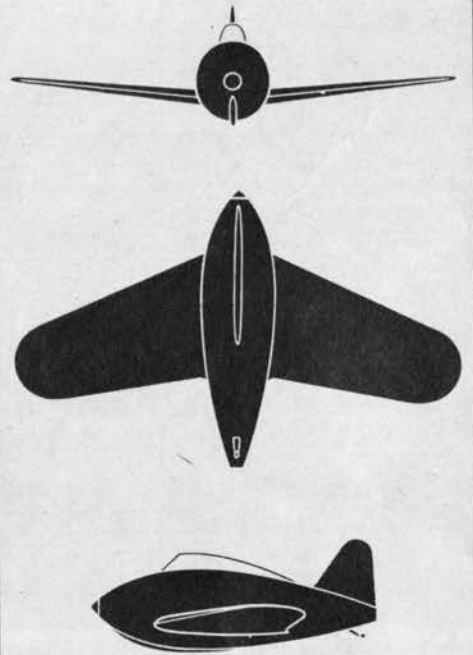
ME-262

SPAN 40 FT., 3 IN. LENGTH 35 FT., 5 IN.
NEW NAZI FIGHTER WITH TWIN JET UNITS



FLYING BOMB

SPAN 17 FT., 6 IN. LENGTH 26 FT. (APPROX.)
FAMOUS ROBOT BOMB RAIDS ENGLAND

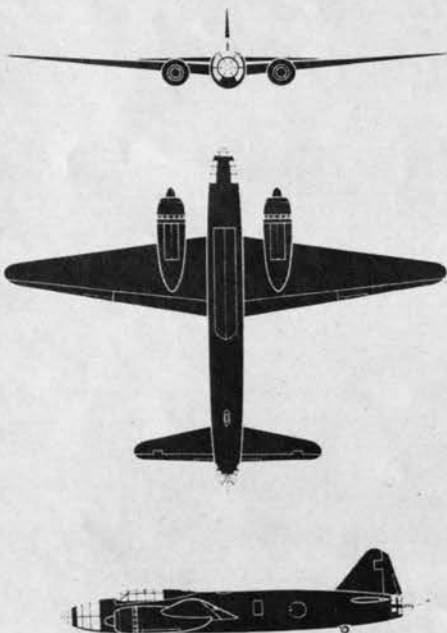


ME-163

SPAN 31 FT. LENGTH 20 FT.
ROCKET-PROPELLED SHORT-RANGE FIGHTER

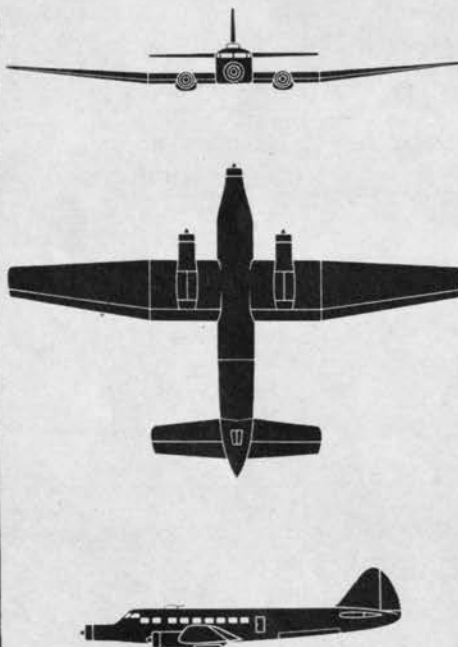
"Weapons of the future" is an apt title for the three German aerial weapons shown in silhouette above. The Me-262 is first sample of German jet-propulsion experiments to be shown in the *Journal*.

It is reported to have a speed far in excess of any current fighter. Although the Me-163 looks somewhat like a flying bomb, it is a rocket-powered interceptor with very short range but terrific speed.



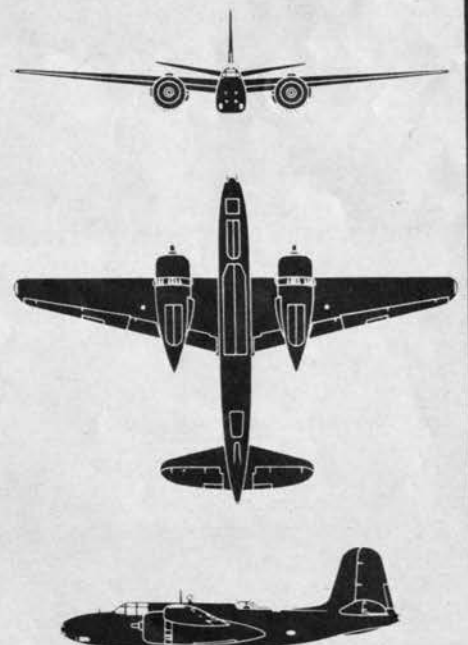
BETTY MARK-2

SPAN 82 FT. LENGTH 64 FT., 11 IN.
JAPANESE BOMBER LOSES SIDE BLISTERS



JU-252

SPAN 110 FT. LENGTH 78 FT.
NAZI TRANSPORT IS TRI-MOTOR LIKE JU-52



A-20G

SPAN 61 FT., 4 IN. LENGTH 47 FT., 3 IN.
ATTACK BOMBER ADDS DORSAL TURRET

Key bomber of the Jap Navy, Betty has undergone minor streamlining changes in Mark 2, and added a lot of glass to the nose (see pictures on p. 6). The Junkers 252 has not yet appeared in large

numbers but may eventually replace the Ju-52, favorite Luftwaffe work horse. Though the Ju-252 is not revolutionary like the three Germans above, the provisional silhouette shows it to be unique.



German medium assault gun is a thick-barreled 105-mm. gun mount on the chassis of the PzKw III tank. This weapon looks almost exactly like the 75-mm. Sturmgeschütz (*below*).

POWERED ARTILLERY

Many Nazi self-propelled guns

are modified captured matériel

German self-propelled guns have increased in importance with the Wehrmacht's withdrawal on all fronts. Retreating Nazi armored divisions have left behind hundreds of these mobile assault and antitank guns.

Last December the *Journal* published pictures of the principal Nazi self-propelled guns. These and many others have since confronted the Allies in the U. S. S. R., Italy and France. Some of the guns that we captured in Tunisia have continued to appear in large numbers in Europe. They include the 75-mm. and 105-mm. assault guns on the PzKw III tank chassis, the 75-

mm. on the Czech PzKw 38 chassis (*right*) and on the French Lorraine chassis (*p. 14*).

Soviet troops first encountered the self-propelled 88-mm. gun, Ferdinand, in 1943; U. S. and British troops met it in Italy. How they dealt with the 72-ton monster is shown on page 14. Ferdinand remains the only Nazi self-propelled gun that was made to order from start to finish—an original design. The others have all been adaptations.

The newest Nazi SP guns (*see pp. 15-17*) continue to be adaptations of present equipment. They illustrate a trend toward greater firepower on PzKw IV and VI chassis.



This captured Czech PzKw 38 chassis that mounts a 75-mm. is a favorite Nazi self-propelled weapon. The gun is housed in a tall, open-topped, slant-sided shield well to the rear.



To pierce the Gustav Line, the Allied troops had to beat their way past many 75-mm. self-propelled assault guns on PzKw III chassis. These last-ditch defenders made the going tough

for the Allies. A squat forward superstructure has replaced the PzKw III tank turret. It is closed in

on top and welded to the chassis. Here on the right and to the left rear are views of the Sturmgeschütz.



More familiar version of Nazi 75-mm. gun on the PzKw Czech chassis has cone-shaped gun housing set well forward. Czech suspension has short wheel base of four large bogies.



Ferdinand, Nazi 72-ton heavyweight, has 88-mm. gun and 8-in. armor on its bow. Picture shows one of the captured 12½-m.p.h. vehicles.

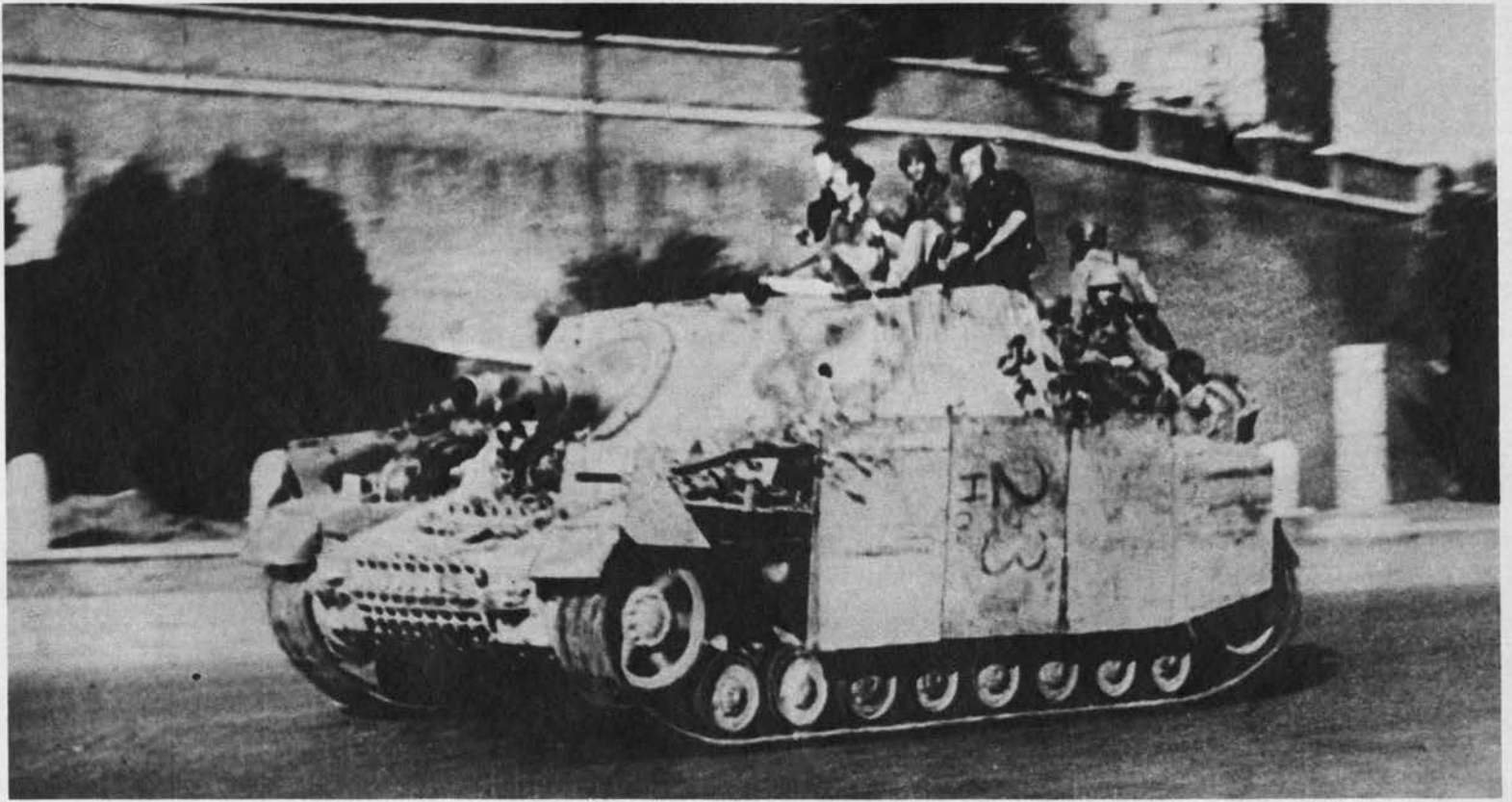


Lorraine tank chassis here mounts a German 75-mm. gun. It has six bogie wheels in pairs with four return rollers and front sprocket.



Hotchkiss 39 tank with a captured Czech 47-mm. gun is another instance of Nazi-used French equipment. German ingenuity salvaged the

weapon's usefulness. Hotchkiss 39 suspension consists of two and a half pairs of bogie wheels with "wheel pants" and two return rollers.



Grizzly Bear here has chassis which is recognizable as PzKw IV with armored skirting. Gun is heavy 150-mm. howitzer with short thick bar-

rel set in heavily armored gun shield. Same four-sided crew compartment appears set back farther on Wasp and Bumble Bee (pp. 16, 17).

GERMANS MAKE USE OF NEW GUNS IN "INSECT" SERIES

In a desperate effort to cope with the mobility of the Red Army's advance the Germans have turned to self-propelled guns. In 1943 they were using several obsolete tank chassis to mount their 75-mm. anti-tank gun. At that time they introduced the 88-mm. self-propelled gun Ferdinand. Since then they have brought out a series of SP artillery mounted on the moderate-

ly fast PzKw IV medium tank chassis. This is the "Insect" series, so-called because each weapon, Bumble Bee and Hornet, has a nickname complete with stinger. In the same series, despite its name is the Grizzly Bear (above). Also in the Insect series are the Wasp on PzKw II chassis and the nameless vehicle below with a 128-mm. gun on a modified PzKw VI chassis.



Huge 128-mm. gun displayed here is mounted on a modified PzKw VI chassis which has the usual overlapping bogie wheels and three re-

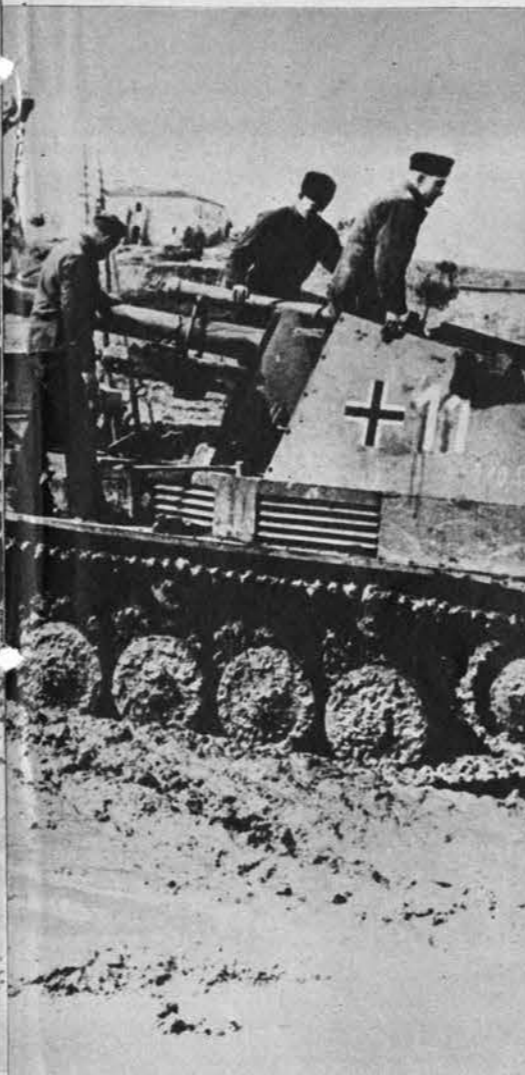
turn rollers. Gun mantlet swells from front of rectangular gun shield with sloping top. Grizzly Bear in background is dwarfed by comparison.



Wasp mounting a 105-mm. light field howitzer is the only one of the Insect series that does not incorporate the PzKw IV chassis. Packing blocks around the gun buffer suggest this Wasp never had time to fire a shot. From it American troops in Italy carefully remove a booby trap.



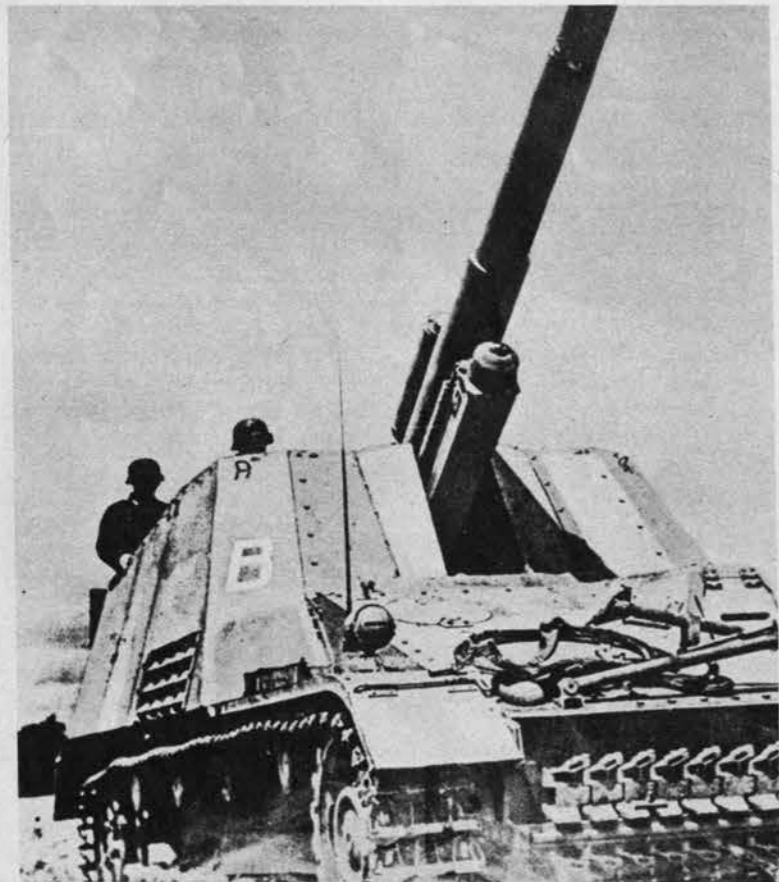
German tank repair unit recovers a bogged-down Wasp from mud. Buffer and recuperator of the 105-mm. howitzer project well beyond



the gun shield. Tip of the barrel is flush with front of chassis. Modified PzKw II running gear has only three (rather than four) return rollers.



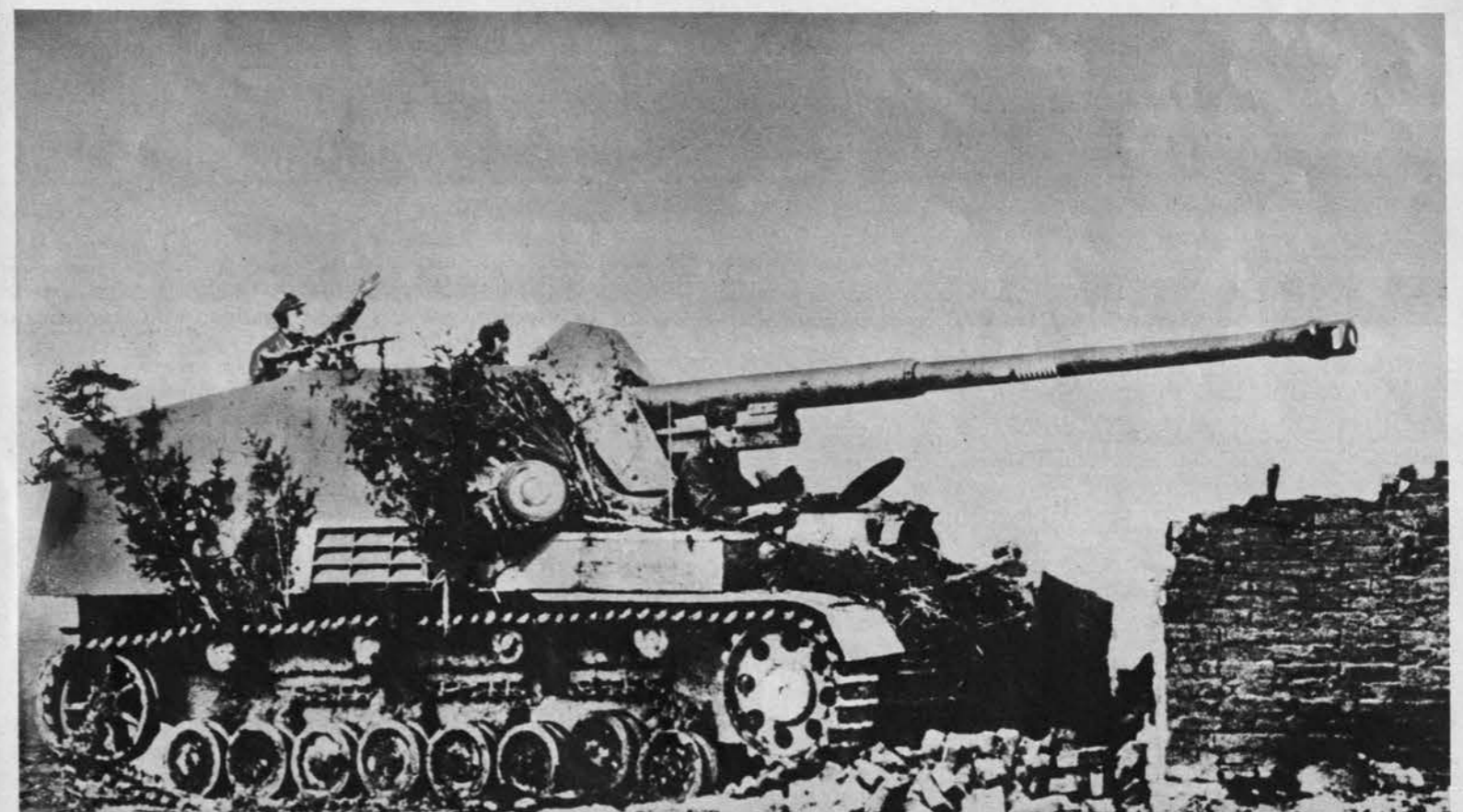
Nazi Wasp is refueled on Russian front. 105-mm. howitzer is mounted at the rear of the chassis within an open boxlike shield. Fighting compartment is open at the top and rear and has high silhouette. The flat-sided superstructure of the Wasp resembles others of the Nazi Insect series.



The Bumble Bee is the Nazi nickname for 150-mm. heavy field howitzer mounted on a modified PzKw IV tank chassis. The gun barrel projects flush with the nose. Superstructure is a four-sided sloping shield.



Bumble Bees were part of Nazi coast defenses of southern Greece. Ventilators at side, near front of the gun housing, appear on most new Nazi SP guns. Poles near top of superstructure are flotation aids.



The Hornet is a new Nazi weapon which adapts the PzKw IV chassis as a self-propelled gun mount for the 88-mm. gun. The engine is forward in order to provide a larger space at the rear for the fighting compart-

ment. The 21-ft. gun barrel extends well beyond the bow of the chassis. The gun shield is tall with sloping sides. The Hornet is more lightly armored and has almost twice the speed of the Ferdinand.



L-5, NEWEST ARMY OBSERVATION PLANE, DIRECTS NAVAL GUNFIRE AGAINST SAIPAN. TRANSPARENT COCKPIT OPENS THROUGH WING, PROVIDES GOOD VISIBILITY. TAILPLANE AND WING ARE RECTANGULAR WITH ROUNDED TIPS



High wing braced with struts, and fixed landing gear make the L-4 Grasshopper look archaic. Head-on view of ex-Piper Cub circling over the Volturno River valley shows shock pads on landing gear struts.



Broad glider wings are found on all observation planes, giving them take-off buoyancy. Large wing flaps on L-5 and L-1 enable them to stop on a dime. L-4 (above) and L-1 have "V" cutout on tailplane.



Turned-up nose with uncowed engine is typical of the L-4. Slow speed permits the use of tall radio wand. Pilot and observer usually sit tandem in large cockpit enclosure which fairs into the fuselage.



The "Flying Jeep" (L-5) has deeper-bellied fuselage than L-4, and big fin and rudder which gradually fairs forward. A new model, the L-5B, will have thicker fuselage with rear space for cargo or a litter.

OBSERVATION AND LIGHT BUT RUGGED AIRCRAFT SERVE

One of the Army's biggest jobs is done by a very small airplane—the light observation type which can land and take off in almost no space. Flying primarily for the Ground Forces as an Air O. P. (Air Observation Post), it spots gun positions, tank movements or road convoys and relays the information to Fire Direction Centers or bombardment bases. When Air O. P.'s appear, German guns come to respectful silence. With grim humor Nazis have nicknamed them "Unteroffizier von Dienst," or "Top Sergeant," whose approach is the signal to scam, and fast. At the start of the war the Army converted thousands of

LIAISON AIRPLANES AS EYES FOR THE GROUND FORCES

Piper Cubs into L-4 Grasshoppers. The L-5, stepped-up version of the Stinson 109, was introduced in Italy. In Burma Cochran's Commandos fly the L-1, obsolescent but still a fine utility plane. The first Air O. P.'s flew from carriers over North Africa to direct invasion fire. Others have since been wheeled ashore from landing craft, or assembled at the first clearing on captured soil. The slowest warplanes in existence, unarmed and unarmored, they offer perfect targets for AA fire, or fighters. In a pinch, however, a well-trained pilot can outmaneuver a fighter by twisting or ducking below a hilltop while the faster plane hurtles past.

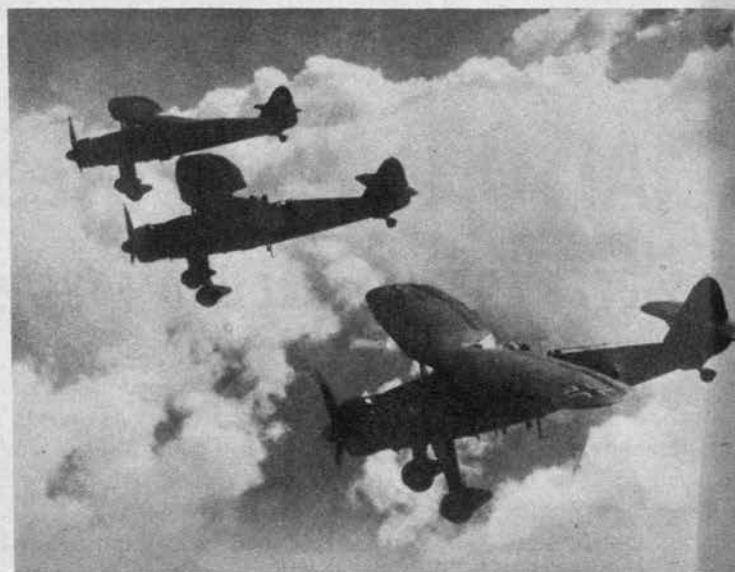


L-1 Commando plane in Burma surveys the damage done to a Japanese bridge at the rear left. Wide wings on the L-1 make it look and perform more like a dragonfly than an airplane. It has an extremely thin fuse-

lage, upswept toward the tail. The radial engine with circular cowling, rounded fin and rudder and large cockpit enclosure protruding above the wing level all help to distinguish it from the L-4 and L-5.



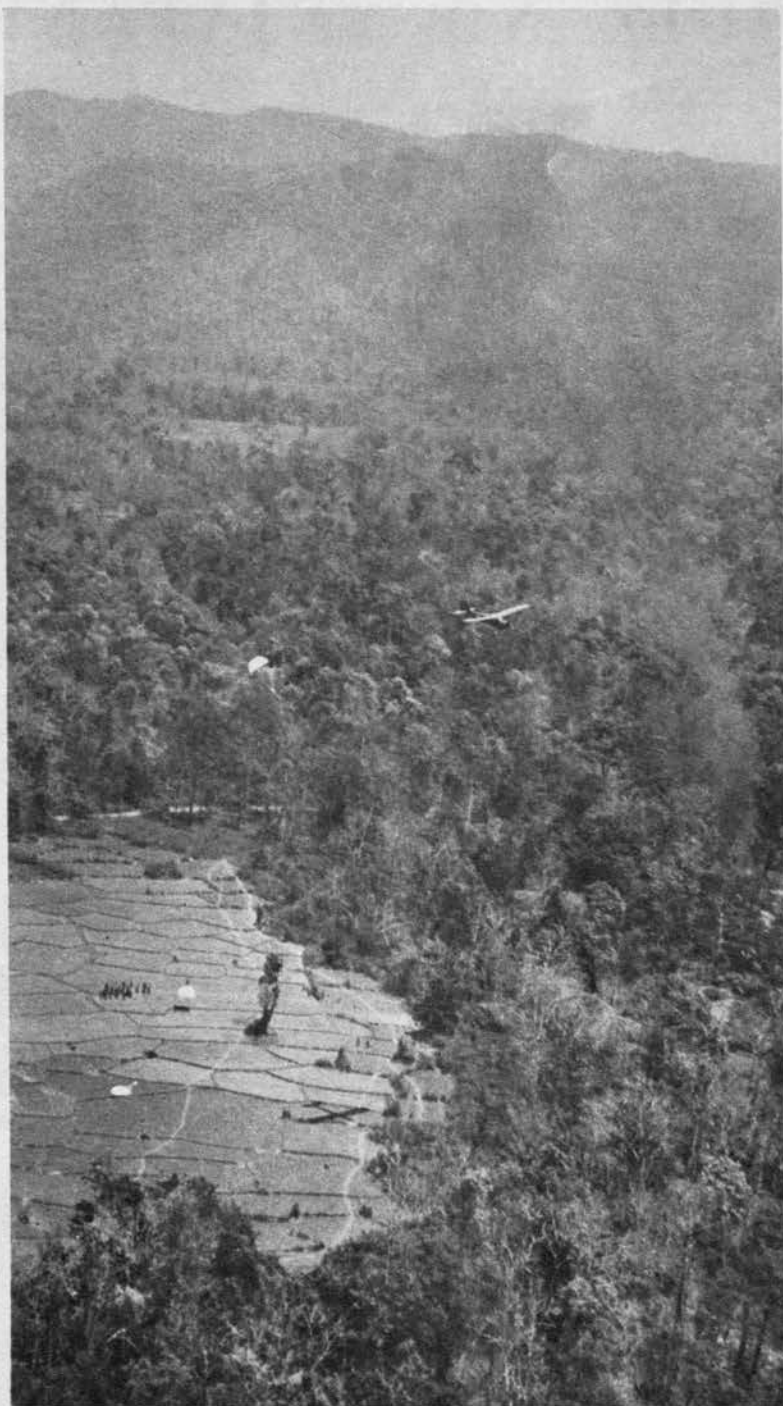
German Henschel-126 is larger and faster than our own Air O. P.'s, resembles our discarded O-46. Unlike U. S. types, the Hs-126 has high parasol wing and is armed with three to five 7.9-mm. machine guns.



Swept-back appearance of Hs-126 wing, large V-shaped cutout above cockpit canopy are distinctive. Used in Russia, this obsolescent type has old-fashioned wheelspats and tailplane set rather high.



Unusual payload of L-1 (five men) makes it ideal ambulance and supply airplane on Burma front, though production stopped three years ago. Note rounded wingtips, pronounced cutout in tailplane.



L-1 parachutes supplies over Burma rice paddies in answer to a signal smudge fire (*right*). L-1's are used to tow gliders, drop smoke markers for bombing squadrons, and sometimes drop small bombs themselves.

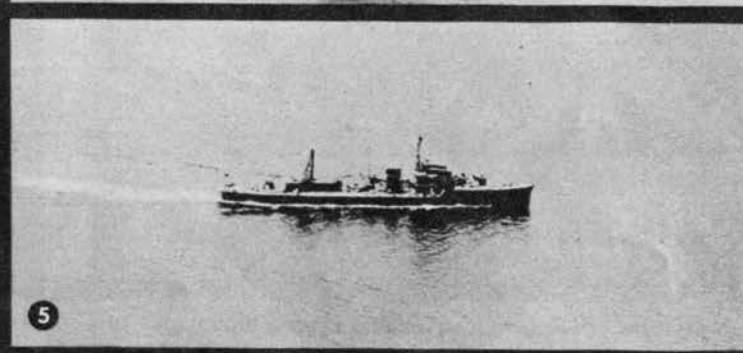
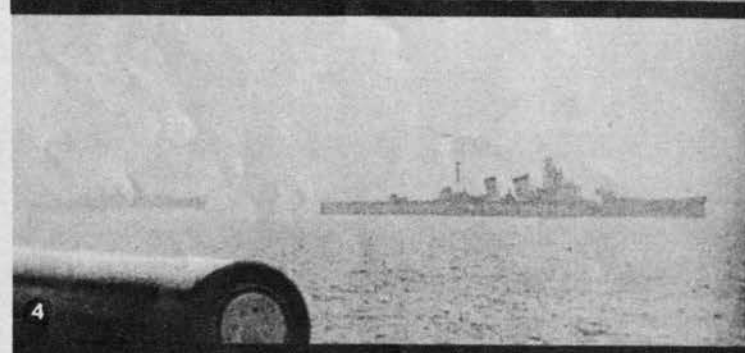
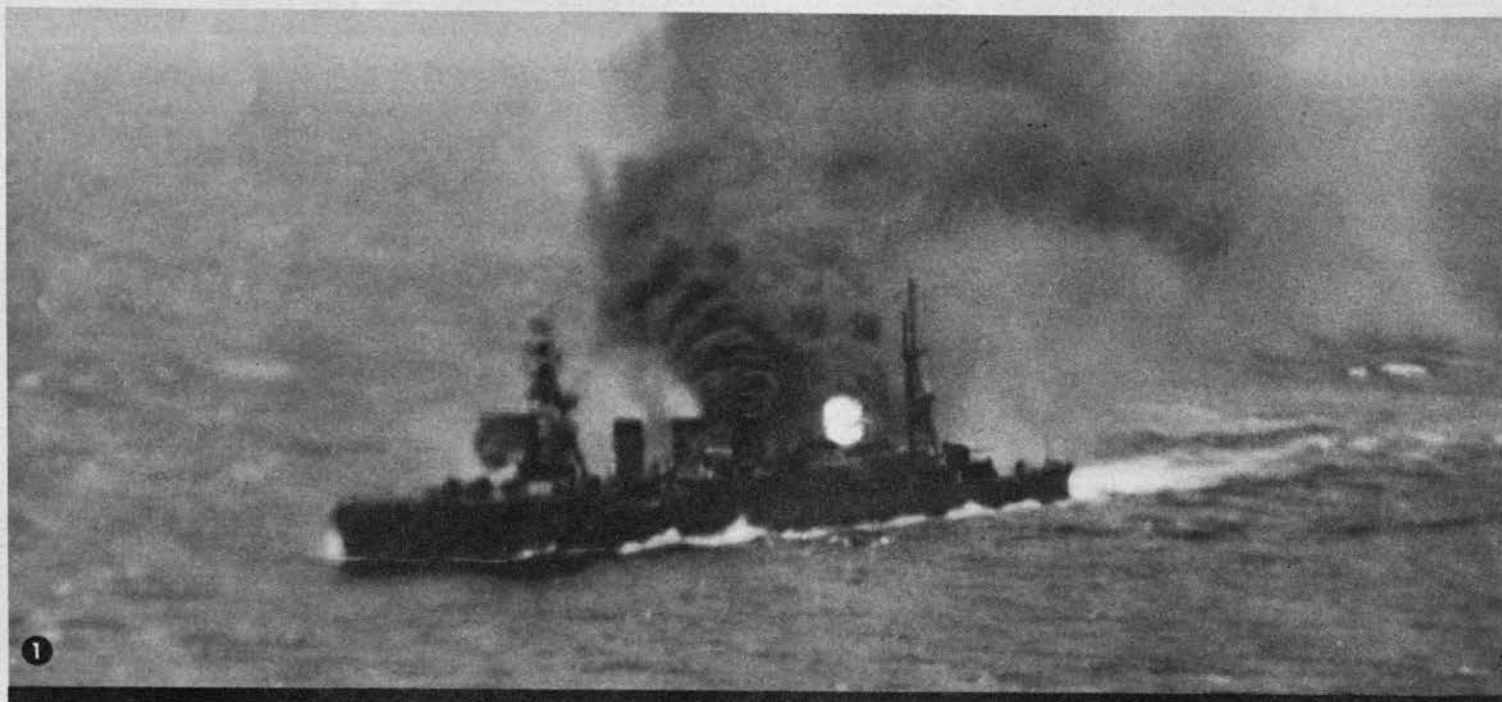


The Fieseler-156, which is known as the Storch (Stork) because of long-legged fixed landing gear, is principal Luftwaffe liaison type. This light, insect-like airplane is somewhat faster than our L series.



Squarish wingtips, long pointed nose and unique tailplane help distinguish Fieseler Storch from our observation craft. Rommel is said to have used a Storch with ambulance plane markings for flights in Lybia.

QUIZ. NO. 2: JAPANESE FLEET UNITS



(For answers, see p. 48)



PLANE OF THE YEAR IS THE LONG-HERALDED B-29. THE SIGHT OF ITS TUBULAR FUSELAGE AND SLENDER WING HAS ALREADY TERRORIZED JAPAN

NEW PLANES

25 NEW AIRCRAFT HAVE COME ON SCENE IN THE PAST YEAR

Under the spur of war's acceleration, the spiral of technical development has mounted higher and higher. Many of the planes which fought during the early days are still in action but they have been so modified as to be vastly improved and materially changed in appearance. Meanwhile a steady stream of new aircraft has appeared to supplant or support them. On the following pages the 25 planes which have attained operational importance during the twelve months of the *Journal's* existence are presented in picture and silhouette form.

To the U.S.'s credit is perhaps the greatest plane of the year—the high altitude, long-range monster bomber, the B-29. In its

use by the new 20th Air Force it has already given new scope to the war in the Pacific. Rivaling the Superfortress in their vital aid to America's battle are the A-20's big brother, the hard-hitting A-26, two revolutionary fighters, the P-61 and P-63A, and the Navy's husky new divebomber, the SB2C.

At the same time Britain, in both RAF and Fleet Air Arm, has added fighter strength, a new torpedo bomber and two military transports. The enemy, notably Japan, has been desperately active in developing new models to keep abreast of the constantly changing air front. Together Germany and Japan have been responsible for 15 of the new craft shown on the following pages.



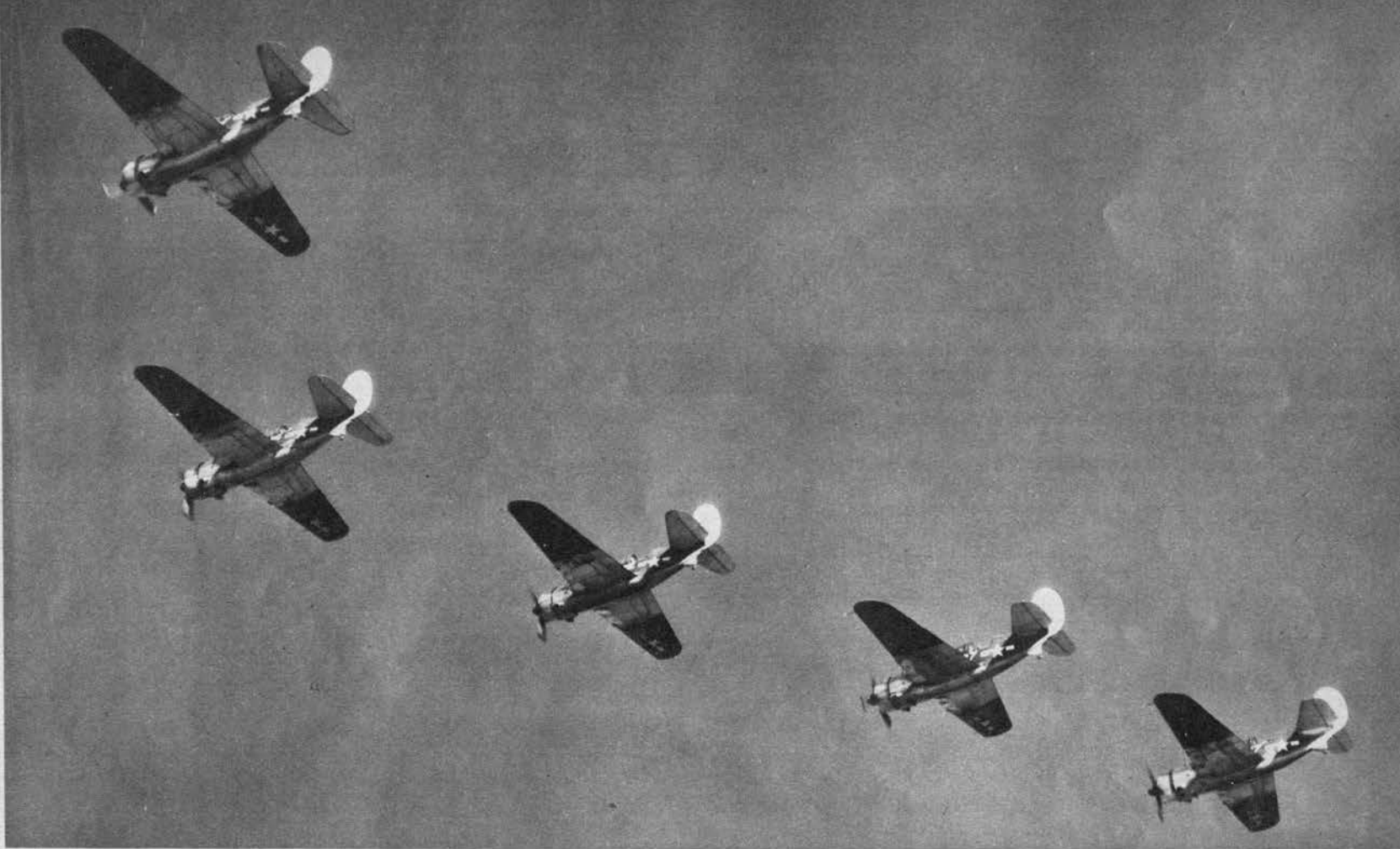
A-26 Squareness is perhaps the recognition keynote of the Douglas attack bomber: both cabin roof and forward belly are flat, while wings, tailplane and huge fin all have squared-off

tips. Moreover the midwing with straight leading edge is set almost at right angles to the fuselage, contrasting with the sharp dihedral of the control surfaces. The medium bomber version has Plexiglass nose.



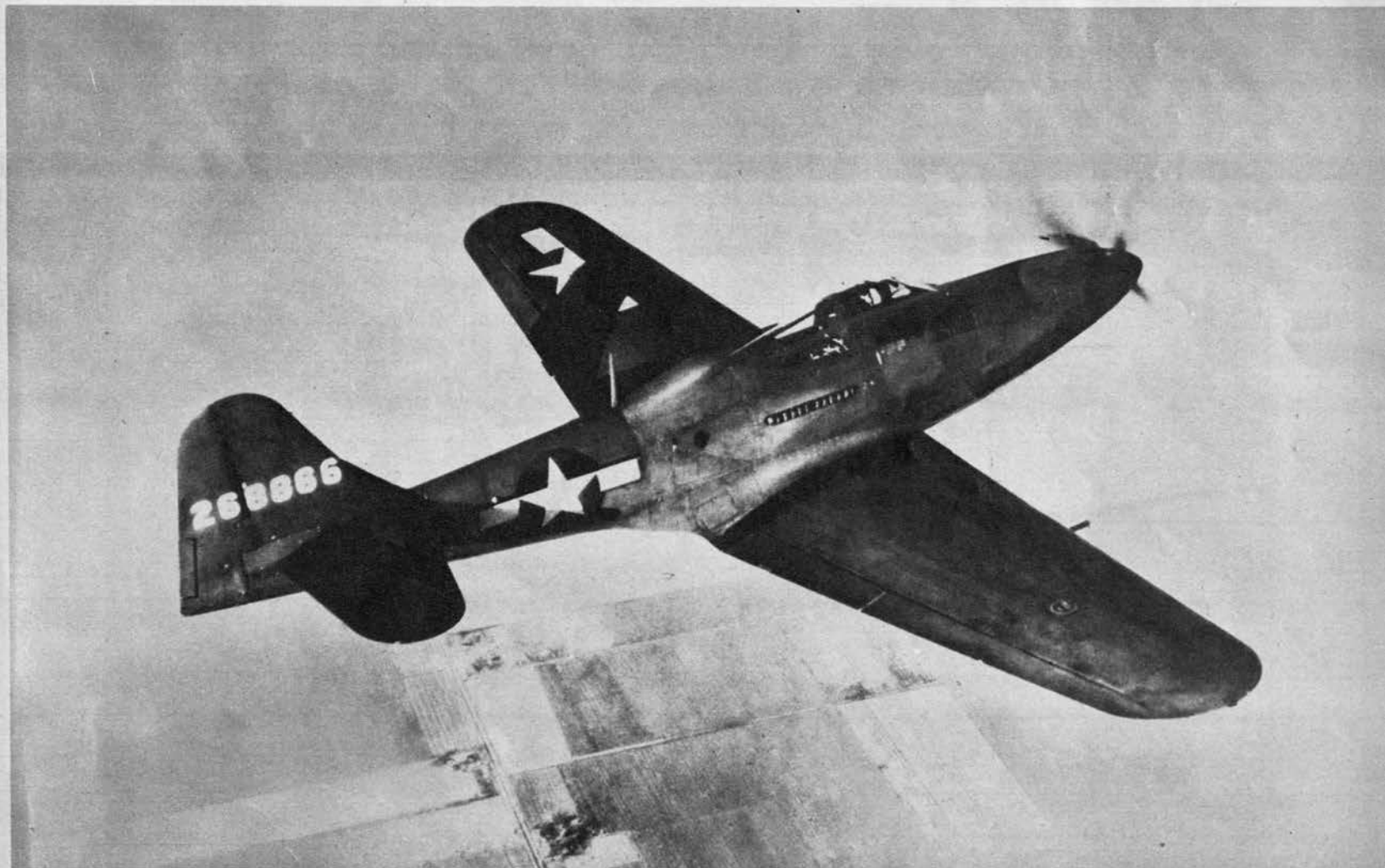
P-61 This dramatic overhead view of three Black Widows streaking over the countryside shows the weird-looking nightfighter's long snout and the stepped-up glassy curves of its

cabin. Broad tailplane is enclosed between the streamlined fins and rudders. Straight leading edge of wing makes the slight gull wing look swept-forward. This radical Northrop design has already seen action.



SB2C Long-awaited, the Helldiver became operational early in 1944, and is well on the way toward replacing the doughty SBD. The Navy's new carrier-borne divebomber is a heavy-

looking plane with a thick fuselage. The broad wing is straight along forward edge, sharply tapered in the rear. In contrast, tailplane has tapered leading edge and curved rear surfaces with prominent cutout.



P-63 Appropriately named the Kingcobra, Bell's new medium altitude fighter is obviously a direct descendant of that company's veteran P-39 Airacobra, widely used and admired by the

Russians. Both aircraft have the same gracefully curved belly line, and hence the same easy "sit" in the air. The P-63's fin is higher and triangular in shape, however, while its tailplane is set farther forward.

NEW PLANES: 1943-1944

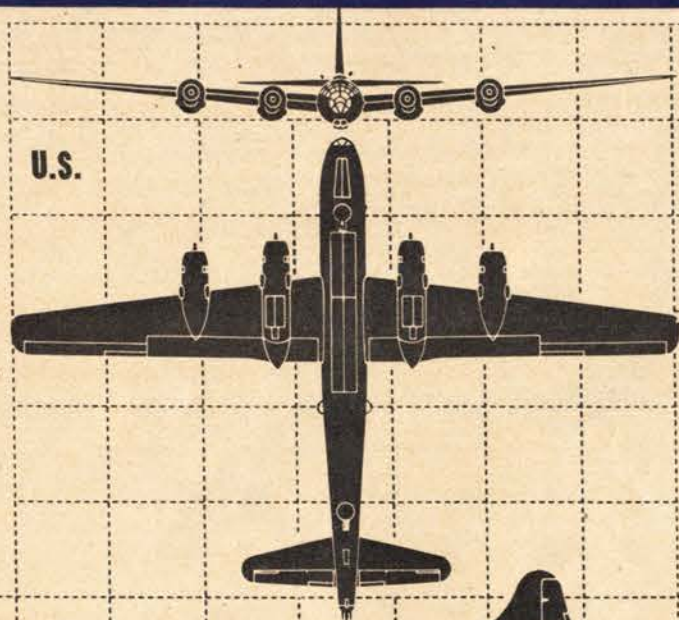
YEAR'S MOST IMPORTANT NEW AIRCRAFT

RESTRICTED

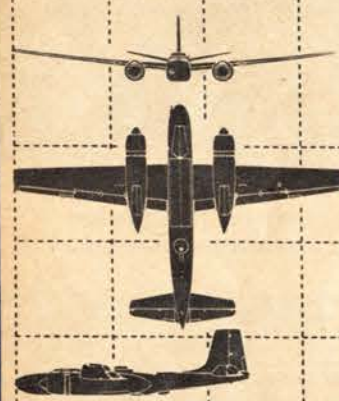
Silhouettes of 25 Allied and Axis airplanes that have become significant since September 1943 are shown on this month's grid. Relatively old aircraft reaching operational importance in the past year are included, as well as new types that appeared for the first time. Picture coverage of the majority of these airplanes will be found on adjacent pages. Next month the *Journal* will present silhouettes and pictures of new marks and models of standard types introduced during the same period.

Scale: each square equals 20 ft.

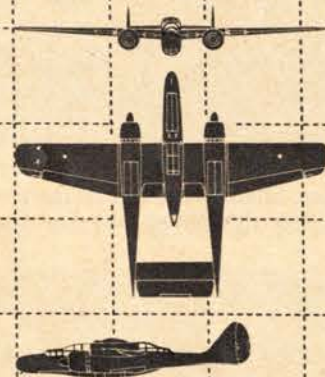
U.S.



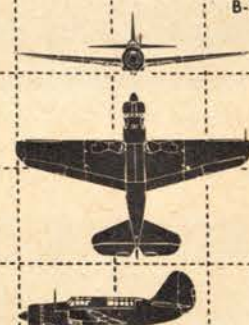
B-29



A-26



P-61



SB2C

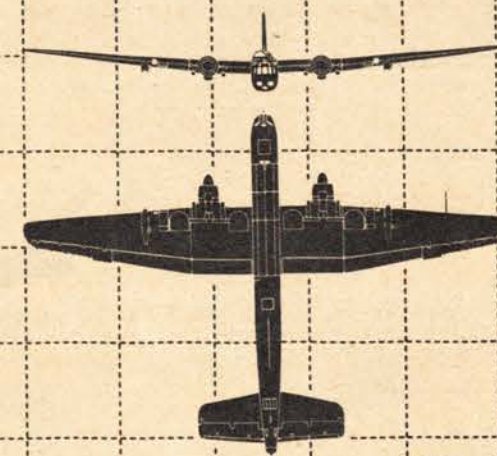


P-63

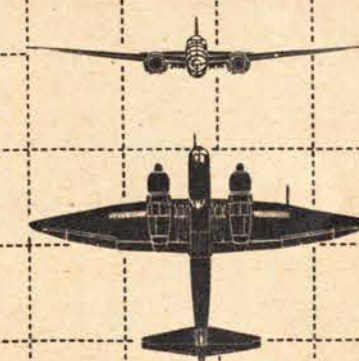
GERMAN



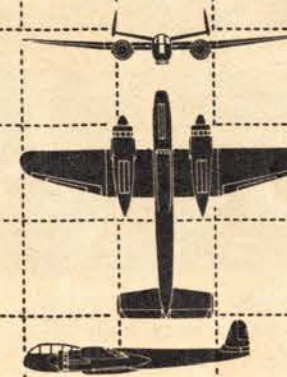
BV-222



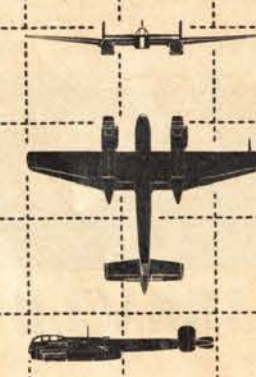
HE-177



JU-188

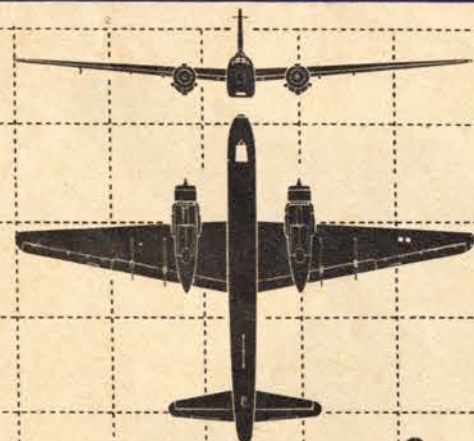


HE-219

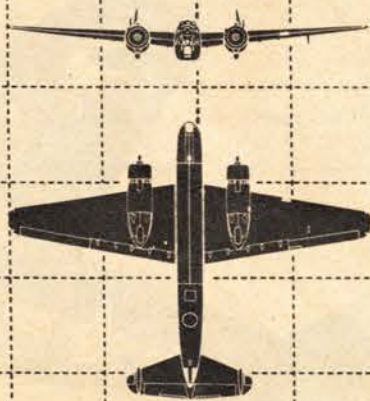


AR-240

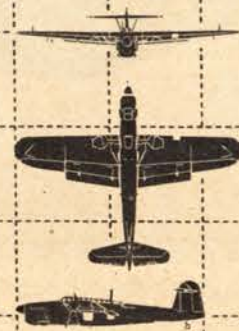
RAF



WARWICK



ALBEMARLE



BARRACUDA

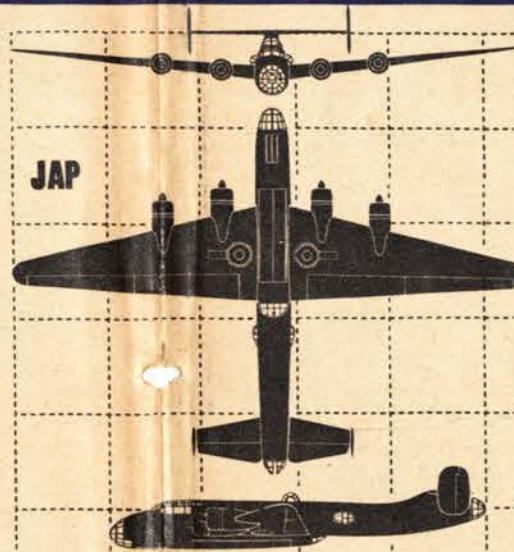


FIREFLY

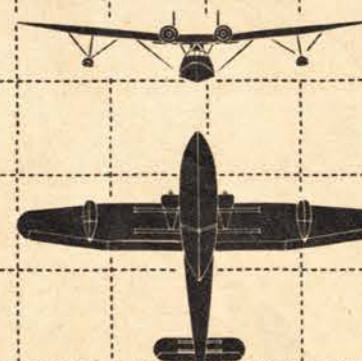


TEMPEST V

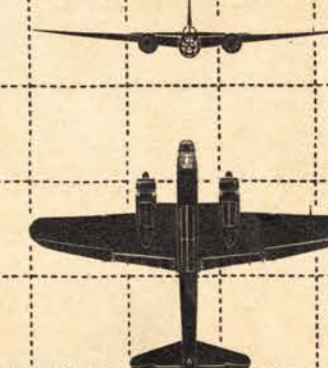
JAP



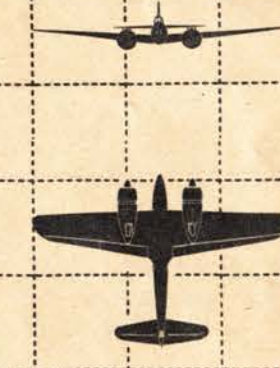
LIZ



CHERRY



HELEN



IRVING



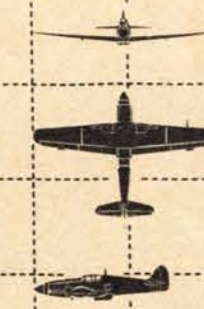
NICK



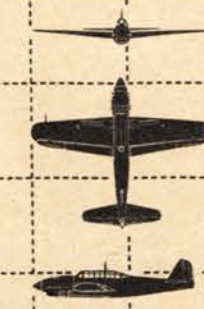
JILL



X-14



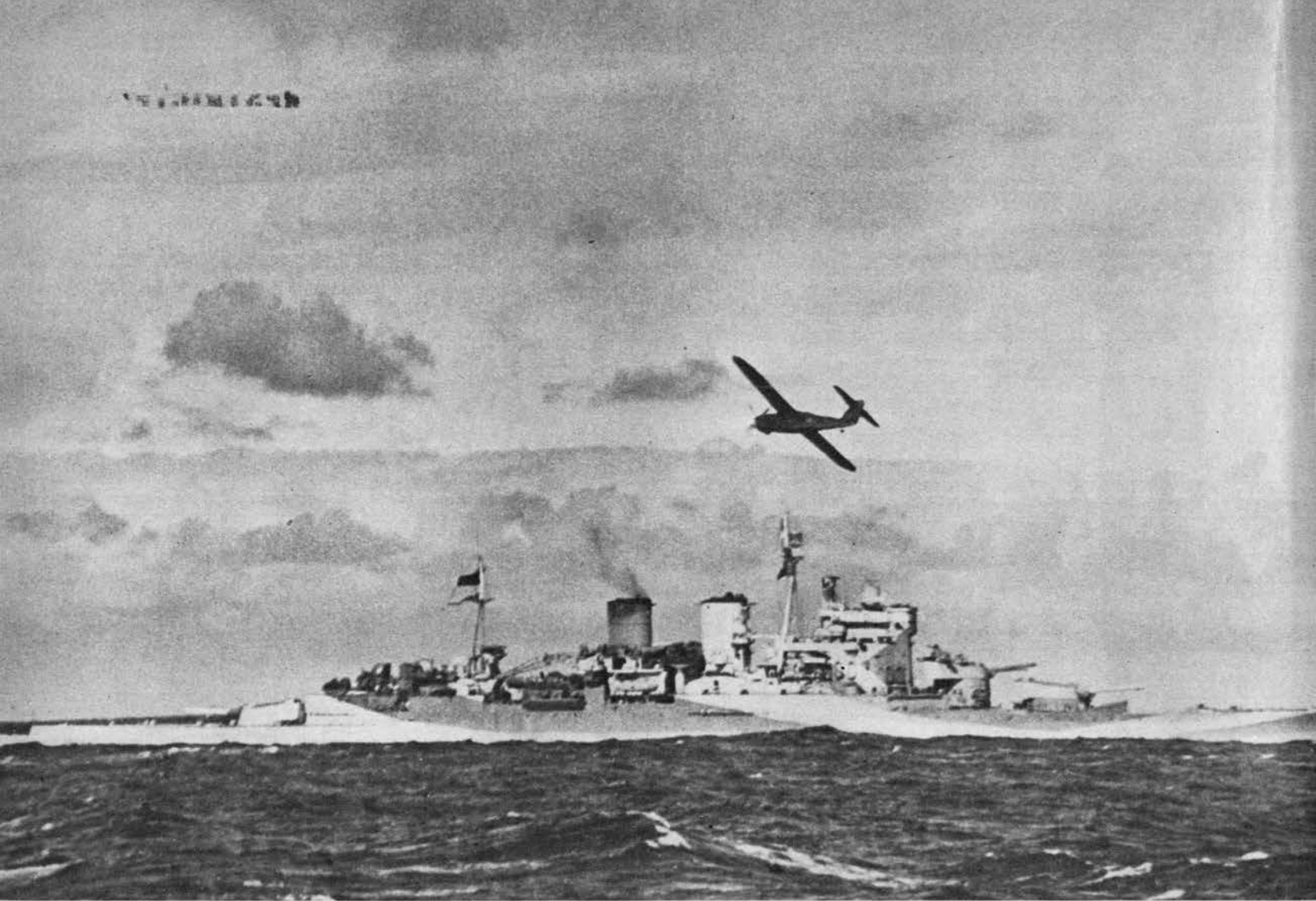
TONY



JUDY



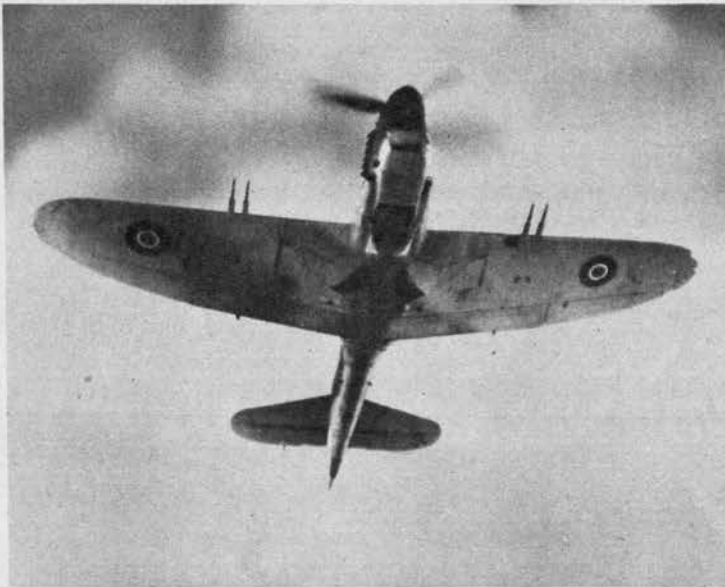
TOJO



BARRACUDA Swooping low over Renown, the torpedo bomber shows very high tailplane which, with conspicuous wing flaps, gives it disjointed look.

ALBEMARLE Originally designed as medium bomber with glassed-in nose, this transport and sea-rescue plane has broad, triangular wing and scalloped fins.





FIREFLY I With four 20-mm. wing cannon, the Firefly is said to be most heavily armed naval fighter plane in the world. The low wing is wide and blunt at the



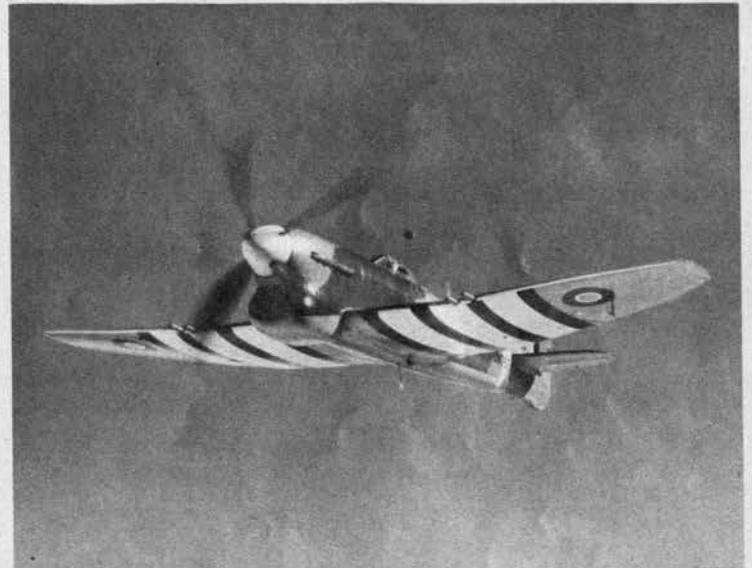
tips. With large spinner and squarish, flat-sided nose, the Firefly has a thickset, heavily built appearance. The ample rear greenhousing is a reconnaissance feature retained from the Fleet Arm's Fulmar.

BRITAIN'S NEWEST

Since last September, Britain's well-balanced RAF has relied on veteran aircraft, revealed few new planes. Two more marks of the Spitfire appeared, but brand-new types were limited to the Tempest V fighter (*right*) and two transports (*below*). All show a definite relation to standard British designs.

The Fleet Air Arm, however, has brought out Fairey-built replacements for two of its old stand-bys. The Swordfish torpedo bomber has a war record hard to beat, but in April its Barracuda successor (*left, top*) made a brilliant debut by crippling the German BB Tirpitz in a Norwegian fjord.

In the Firefly (*above*), the Fleet Air Arm has a new naval fighter. Powered by the same Griffon engine mounted in the Spitfire XII, the Firefly is designed for reconnaissance and long-range operation. Hence it will supplement and not replace the Seafires, Wildcats and Corsairs already with the Fleet.



TEMPEST V Thinner fuselage and roughly elliptical wing set the Tempest apart from its Typhoon ancestor. Rudder is rounded and fin fairs easily forward.



WARWICK Graceful and larger variant of the ten-year-old Wellington bomber design, the Vickers-built Warwick transport is rated as a new aircraft. Its cigar-

shaped fuselage is smoothly rounded at both ends, and the tall, narrow fin rises abruptly from its sleek surface. The narrow, triangular wing and tailplane both stem from the middle of the fuselage.

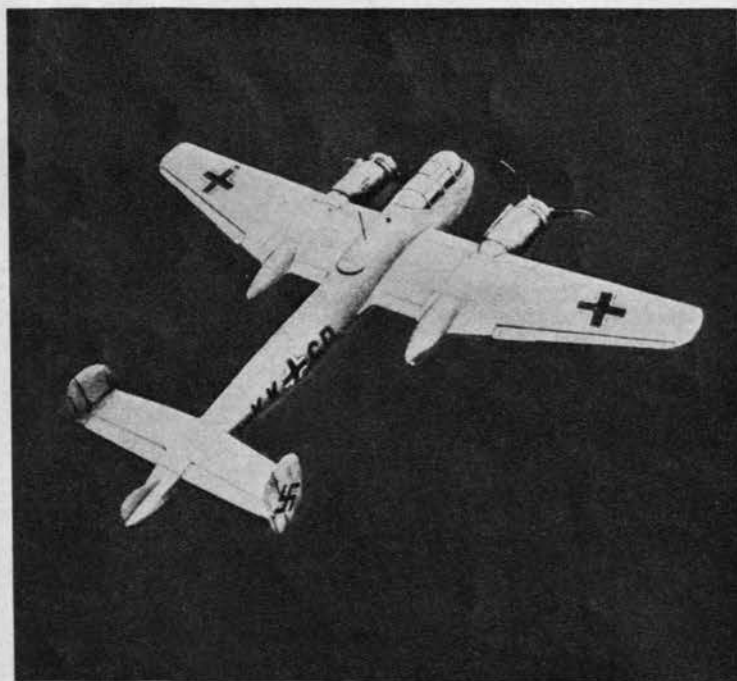


JU-188 The up-to-date speed and bomb load of this latest Junkers put new vigor into the Luftwaffe's aging medium bomber force. Patently German in design, the Ju-188 is a narrow, ex-

tended fuselage with the high, glassed-in dome of the cabin balanced by a harshly angular fin rising at the tail. Sharp wingtips also set it apart from the Ju-88, proven Nazi design which sired the new bomber.

NAZIS CONCENTRATE ON BOMBER TYPES

Invasion from three points of the compass and accelerating Allied air attack have put Germany on the aerial defensive. Yet the Luftwaffe's harassed leaders have either chosen or been forced to rely on their standard fighter types during the past year, assisted in recent months by small numbers of new jet-propelled designs (see p. 11). Thus the five airplanes in the German group of this survey are all specialized versions of a basically offensive aerial weapon—the bomber. Two are venerable aircraft just reaching operational importance—the BV-222, a prewar design for transatlantic commerce, and the He-177 which has given Nazi engineers great trouble with its tricky power plant of two side-by-side engines driving each propeller. Unfortunately, photographs of the clean-looking Heinkel 219 are not available. It is, however shown in silhouette on page 27. This airplane was first reported as a divebomber but, perhaps because of intense Allied pressure it is now used either as a long-range fighter or as a nightfighter

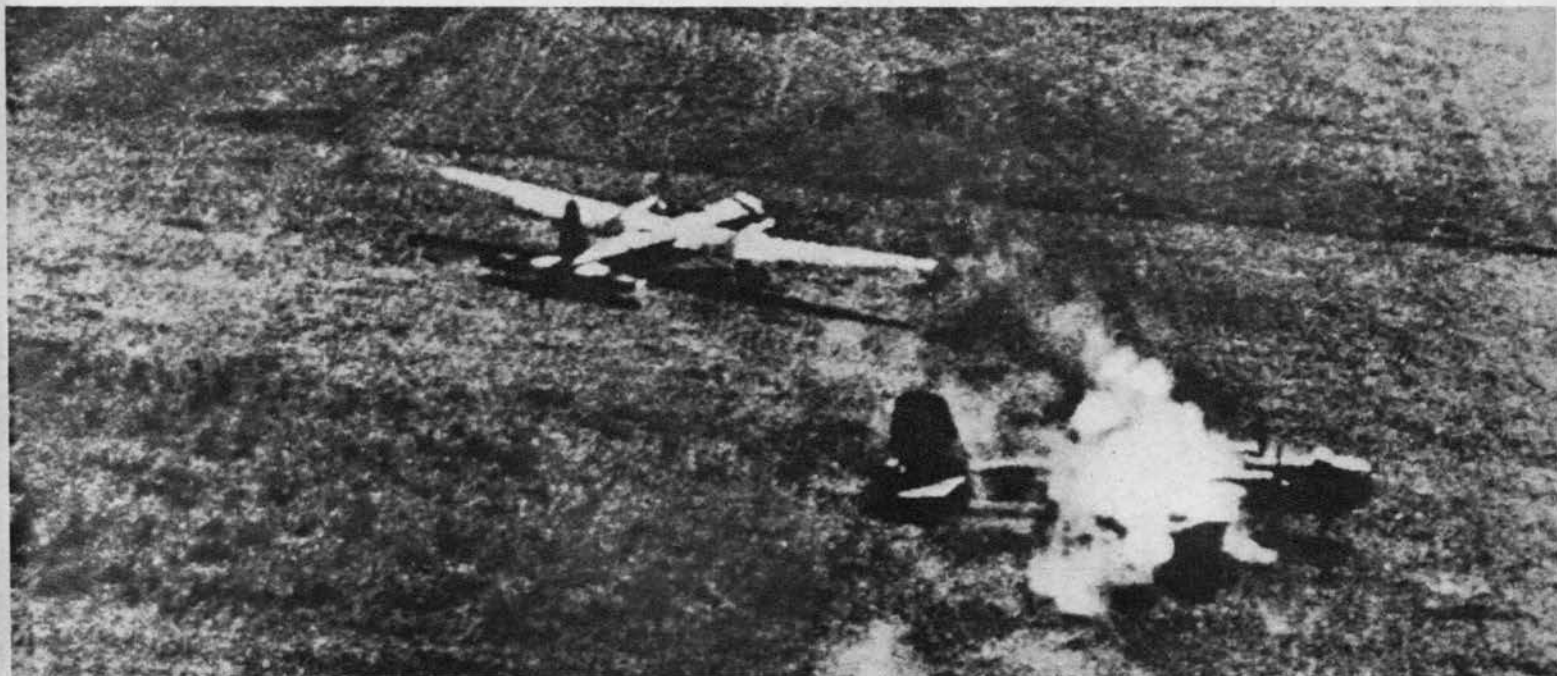


AR-240 Long nacelles which stick out far behind the stubby wing's rear edge help make the blunt-nosed Nazi reconnaissance bomber an ugly, clumsy-looking plane.



BV-222 Known as the "Viking," this huge Blohm and Voss flying boat has recently been flying long-range sea patrols. Somewhat resembling the smaller Sunderland, the Nazi mon-

ster can be recognized by its six engines, drooping nose. While the Sunderland is compact and stubby, the Viking's hull is long, streamlined and gives the impression of too much bulk for efficient flying.



HE-177 Caught by both guns and cameras as P-51's strafe a Nazi airdrome, He-177's show their abnormally long, bird-of-prey wings. The wing is set rather far back, giving the He-

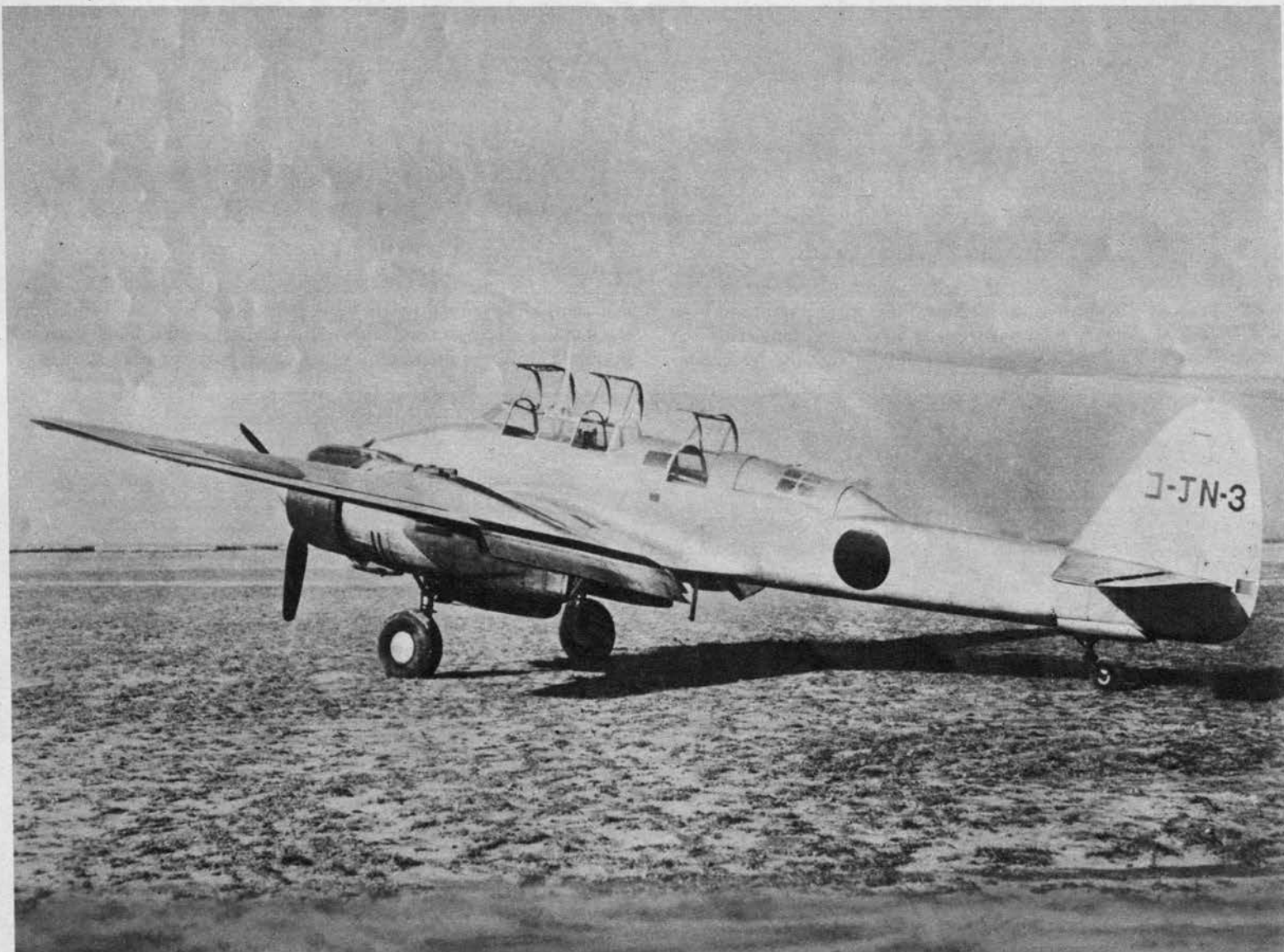
177 the long nose of a modern bomber. Also noteworthy is broad square fin with sharp cutout at its base. This early German heavy bomber is now attacking Allied convoys with the Hs-293 glider bomb.



TOJO Somewhat chunky for a Japanese fighter with its barrel-shaped radial cowling, Tojo retains characteristic Jap fuselage which thins out sharply to a long stinger-like tailcone.

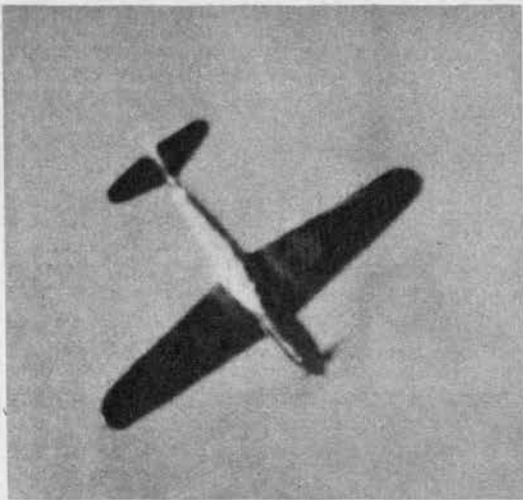


NICK Fat, underslung nacelles look almost too heavy for Nick's lean fuselage and short pointed nose. This swift, maneuverable fighter has a flat-roofed unfaired greenhouse of the blister type.



IRVING Close-up view of this new twin-engine nightfighter and reconnaissance type at rest on an airfield reveals the uneven levels of its greenhouse. Like other light, twin-en-

gine Japanese, Irving has big, round nacelles, and its wing is somewhat triangular in outline. Its wing has a straight leading edge and raked tips. Irving has most frequently been confused with Nick (*above right*).



TONY The only Jap inline fighter known, Tony is a small, trim aircraft with a narrow, equally tapered wing, belly air scoop.

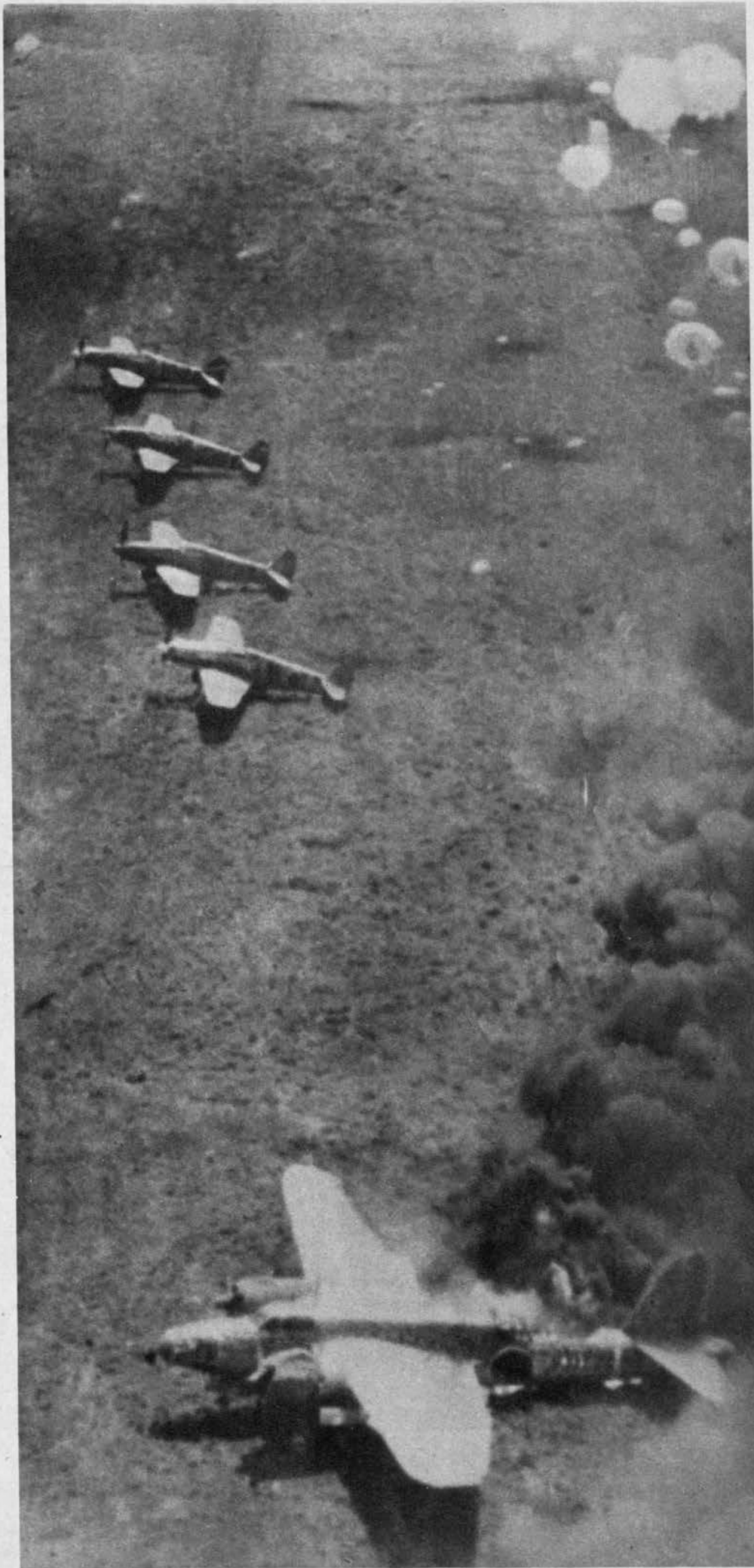
VARIED NEW JAP PLANES

Faced with overwhelming losses in every sky battle, the Japanese have injected fresh life into almost every department of their outclassed air force. Three dangerous new fighters, a divebomber, torpedo bomber, reconnaissance planes and a straight medium bomber have been thrown in to halt the accelerated U. S. advance. U. S. Intelligence has worked overtime to keep abreast of this flood of new aircraft in the Pacific war zone. Particularly troublesome have been four light, twin-engine types—Nick, Dinah, Irving and Frances (see *News*, p. 7).

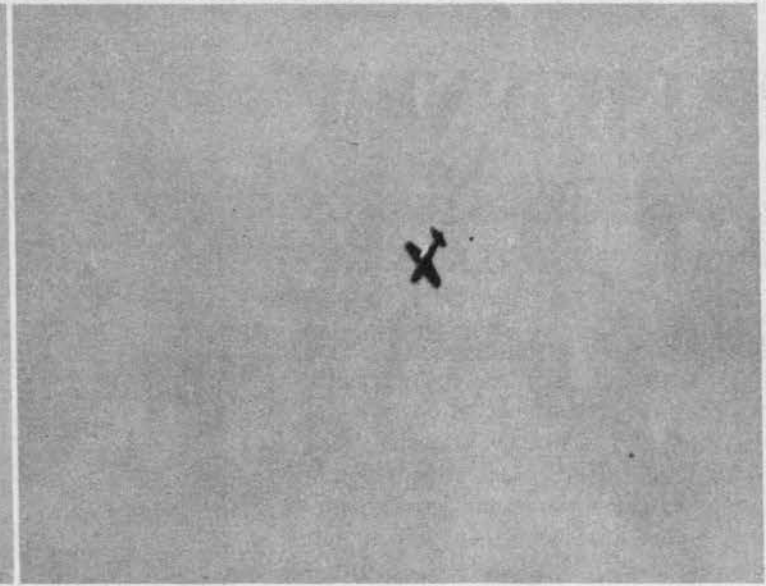
Of this array of good warplanes, perhaps the most striking is the heavy bomber Liz. If eventually it appears in large numbers, Liz will be the first Japanese venture into the four-engine bomber field now dominated by the British and U. S. heavyweights.



HELEN Of conventional design, middle-weight Helen has spacious lines. Rear edge of the fin rises vertically to mild point.

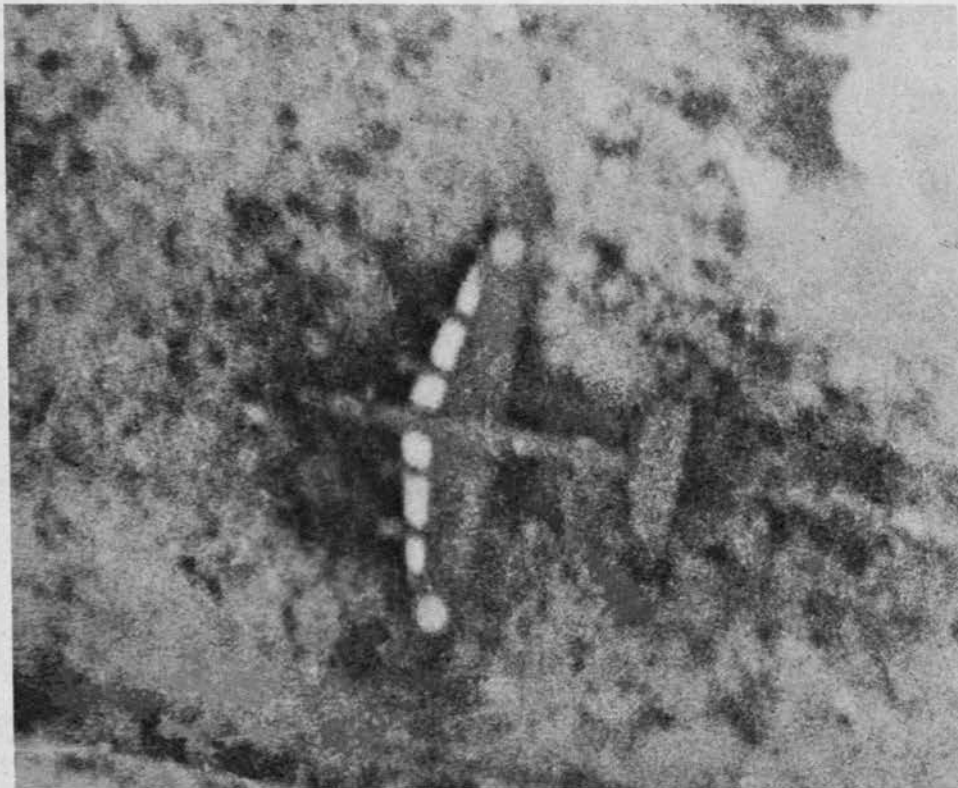


TONY & HELEN Row of Tonys in the rear emphasizes this type's smooth dorsal line, long snout and small fin. In the foreground, note Helen's deep fuselage, the long cabin, and wide wing jutting forward between nacelles.

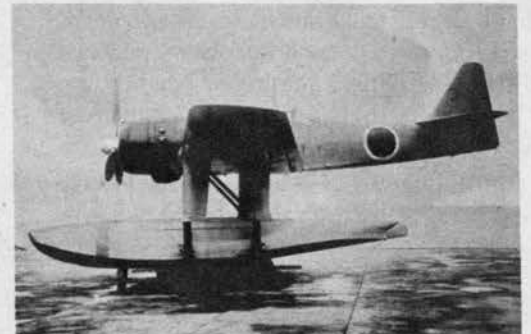


JUDY Low but lengthy greenhouse provides good visibility for Judy's two-man crew on reconnaissance flights from Japanese carriers. The fuselage is long in proportion to wing,

and is deepened by a large radiator beneath the nose. Shallow curve of the dorsal line terminates in a sharply pointed spinner. Judy and Tony are only currently operational Jap planes to mount inline engines.



LIZ Hazy reconnaissance view shows this Japanese heavy bomber's four staggered nacelles mounted on wing's sharply tapered forward edge. The curious upward bulge of the rear fuselage supports square-cut twin tail assembly (see silhouette on p. 27).



PAUL II Versatile floatplane, Paul 11, formerly X-14, serves as divebomber. Twin floats project well forward.



CHERRY Slim hull of this twin-engine flying boat has an up-swept tail and parasol wing with sharp dihedral.



A TORPEDO-CARRYING

JILL MAKES DESPERATE

ATTACK ON U.S. CARRIER



American line of battle lashes
out with big guns in raid on
Japanese stronghold on Ponape



NORTH CAROLINA (LEFT) AND SOUTH DAKOTA ARE TYPICAL NEW U. S. BB'S. NOTE CONCENTRATED SUPERSTRUCTURE AND LOW SILHOUETTE

BATTLESHIPS

Heavily gunned and armored, they are the main line of defense in the battle for the seas

Though the sea battles of this war have been, almost without exception, fights between ships and airplanes, the battleship remains the greatest strictly water-borne striking force in a modern navy. Its mere existence is a threat which can only be answered by bigger and better battleships on the opposing side. Its big guns, though outranged by plane-borne bombs, can throw a heavier, more accurate and more penetrating weight of fire than air attack. Its extensive compartmentation and concentrated armament make it almost invulnerable to all forms of attack. No lighter ship can approach it without courting destruction.

The record of the BB in ship-to-air fights is generally good. Only the unsupported *Roma*, *Repulse* and *Prince of Wales* have fallen to air attack alone. On the other hand, our *South Dakotas*, *North Carolinas*, *King George V's* and Japan's *Ises*, *Nagatos* and *Fusos* have come through battles damaged but still afloat and fighting. Though the immensely greater fighting range of ship-borne aircraft has so far prevented line-of-battle encounters, neither Japanese nor Nazi airpower has succeeded in preventing Allied battleships from moving up to shell the beaches of Normandy, Italy or many of the enemy islands in the Pacific.

In Atlantic waters Allied battle strength is now unchallenged. All of Germany's big ships are sunk or irreparably damaged.

In the Pacific, the Japanese Navy still has an imposing fleet and in the *Yamato*, probably has a battleship equal to anything but our *Iowa* Class ships. But ship by ship, fleet against fleet, the Pacific war is balanced heavily in our favor. As the forces shape up, there can be no doubt as to the eventual winner.

The amazing American line-up is headed by ten of the newest and finest ships afloat—four *Iowas*, four *South Dakotas* and two *North Carolinas*—supported by 13 older vessels. Our British allies can align 15 more and the Free French have a fine ship in the refitted *Richelieu*. Against us, the Japanese, the only enemy seapower, can throw only eleven ships. Three of these are 45,000-ton BB's which may be better than anything but the *Iowa* Class ships but the others are probably no better than our *New Mexicos* despite the constant Jap policy of modernization.

In every case, the ships of each fleet are marked by distinct national characteristics. Our ten new battleships have a clear family resemblance: the *SoDaks* are shorter, handier, single-stack *North Carolinas*; the *Iowas* are extended, twin-stack *SoDaks*. The British battleships up through the new *King George V* Class all have square, economical lines and a solid workaday appearance. The Japanese apparently continue to favor the tall, thin, cluttered pagoda tower and rakish hulls and stacks.



Beautiful power of the world's greatest warship is shown in these recent photographs of U.S.S. Iowa (*above, below*). Her 887-ft. length contrasts with her low superstructure, making her look low in the water.

Her tall conical fire directors show relationship to other new and refitted U.S. BB's while disposition of her guns in triple mounts is also American. From above note her long narrow bow and tapered stern.





Britain's best are the four KGV's which include the Howe (*above*) and the King George V (*below*). Their main guns are in a quadruple

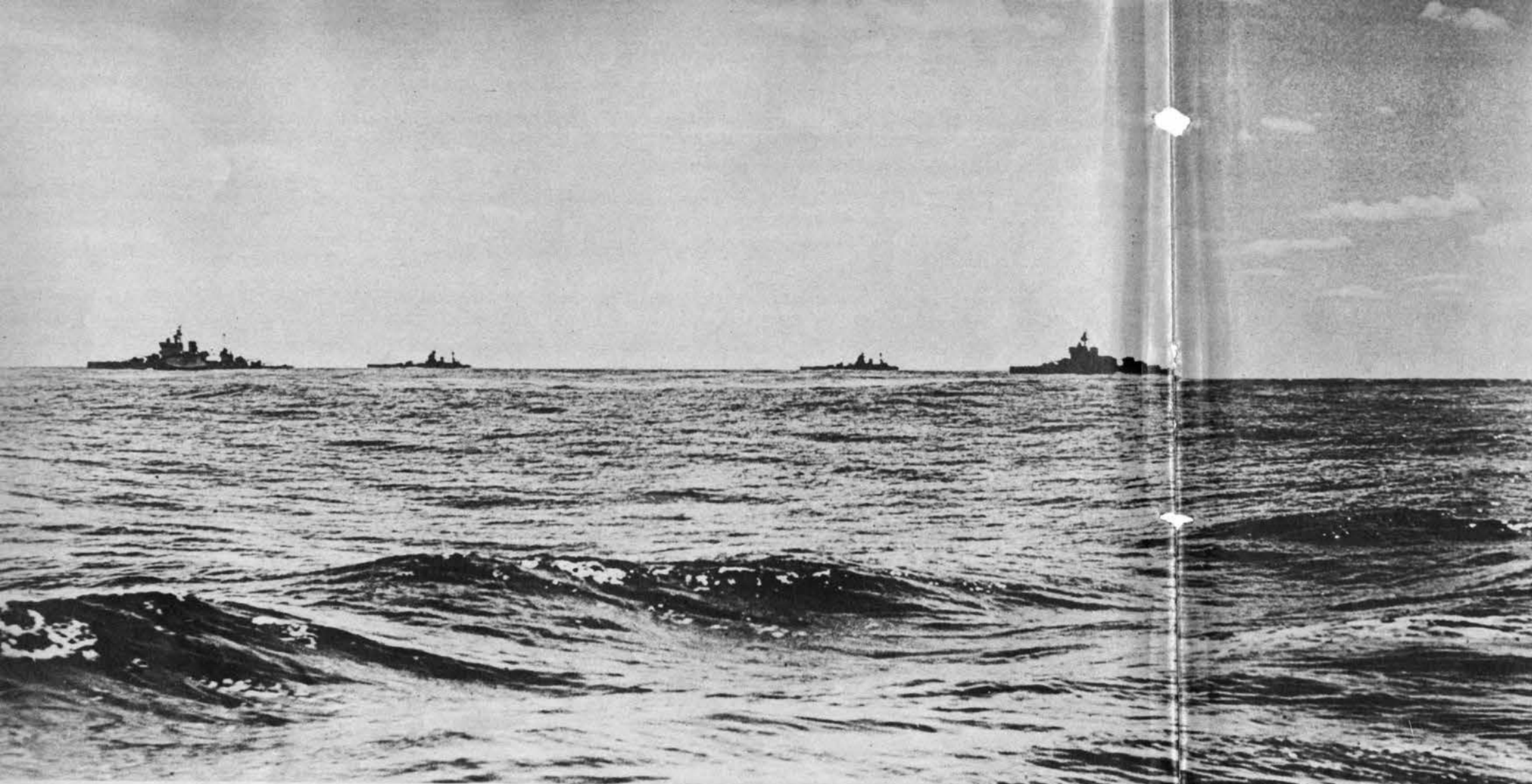
and twin mount forward, a quadruple aft. Their stacks are straight, flat and widely spaced. Their bridges are flat-sided, upright blockhouses.



Free French Richelieu (*below*) is a valuable addition to Allied might. Bent stack combined with the mainmast is unique. Her main arma-

ment concentrated in two forward quadruple mounts is indicative of the French concept of BB use, the spearheading of strong task forces.



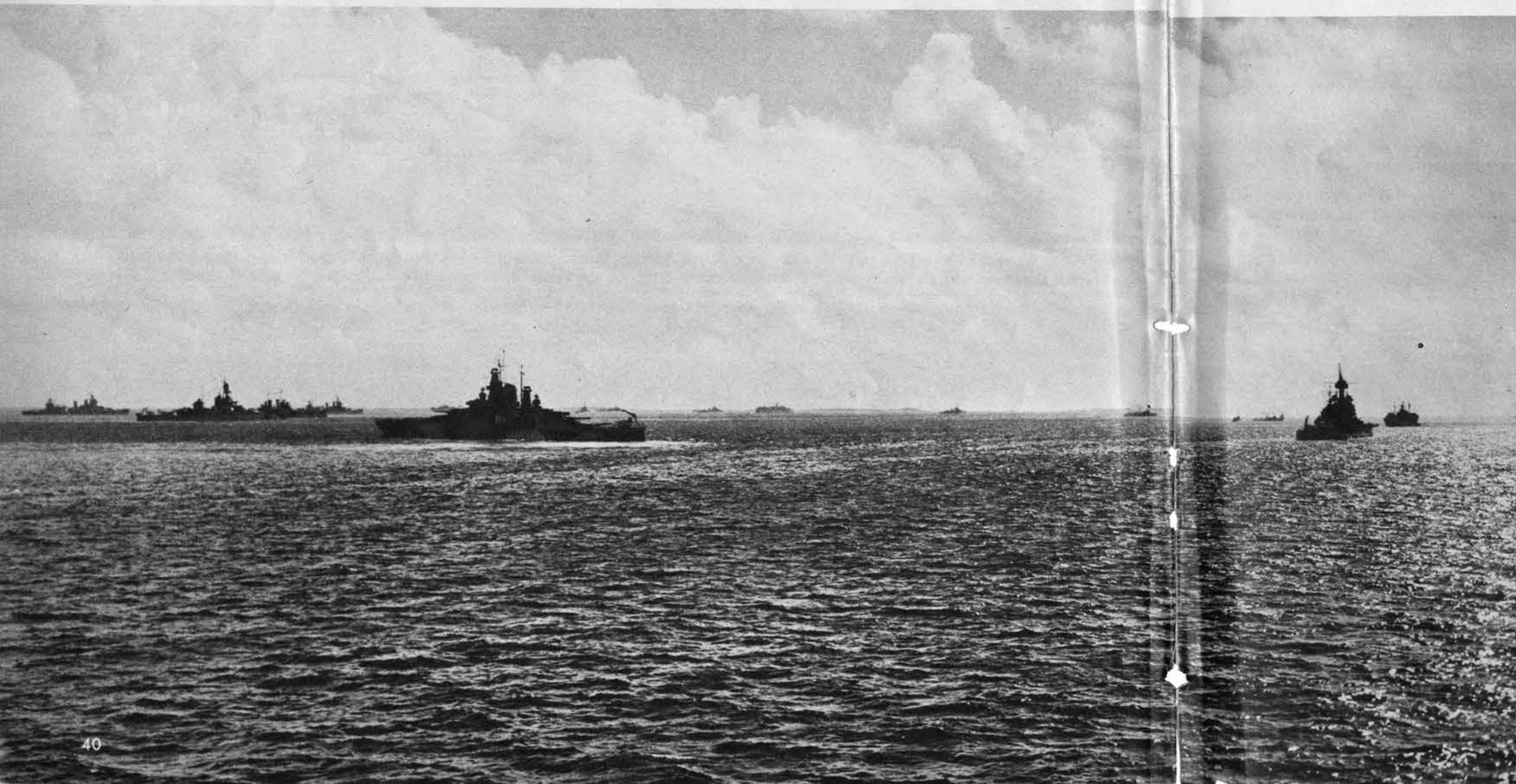


Square outlines mark H.M.S. Valiant (*left*) and Warspite (*right*) in this panorama of Brit-

ish seapower. Truncated sterns of center ships show them to be Nelson and Rodney.

Older U. S. BB's of Pennsylvania, Tennessee and Colorado Classes are shown below in a

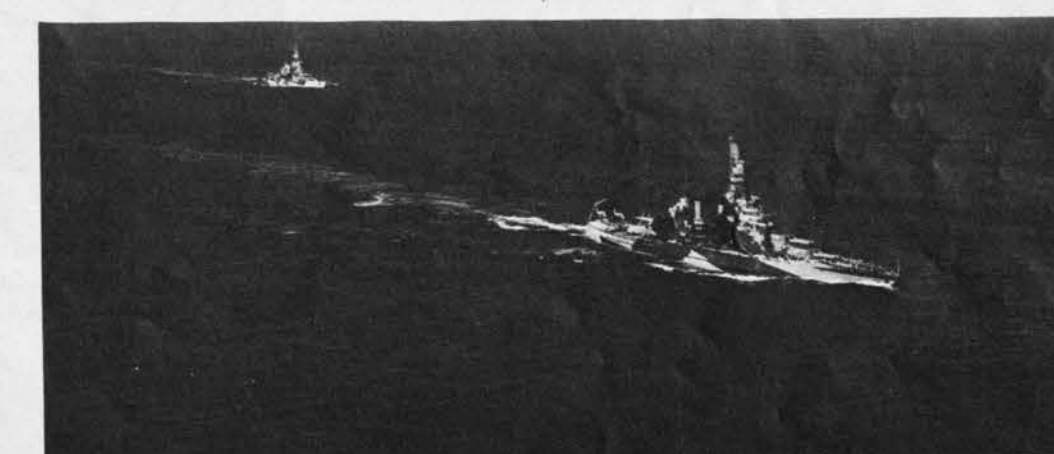
recent action. Tennessee (*left foreground*) has modern appearance of refitted U. S. BB's.



H.M.S. Nelson has all three turrets forward on long foredeck, is cut off sharply abaft her mainmast. Nelson and Rodney mount 16-in. guns, are still the most powerful British BB's.



Warspite (*foreground*) is typical British ship with blockhouse bridge, low straight stack, balanced design. Sister ships Resolution and Royal Sovereign (*right*) are distinguished by tall mainmasts.



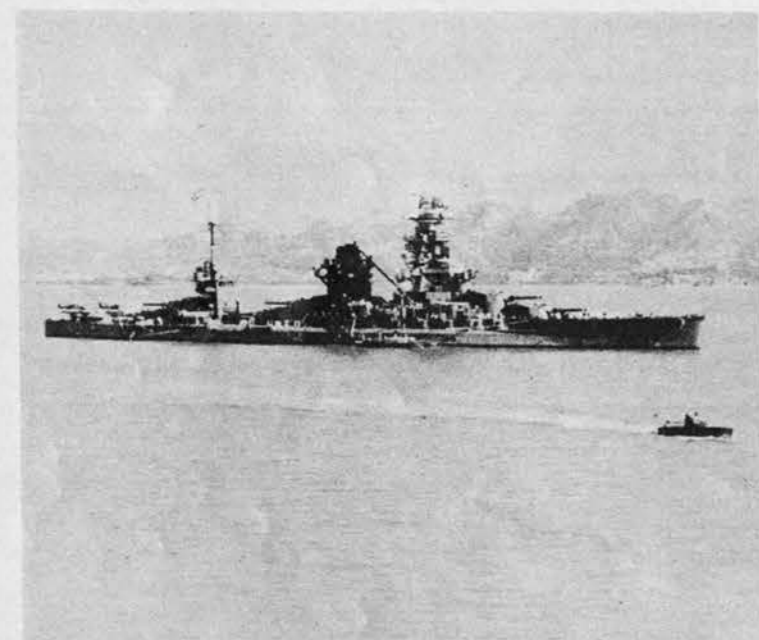
Refitted sisterships Colorado and Maryland have changed little in appearance in recent refit. Chief change is the replacement of the stump cage mainmast by a short tower and pole mast.



New Mexico Class somewhat resembles the older British ships. Age is shown by the lack of streamlining. Chief distinctions are a raked clipper bow and short masts, bridge and stack.



Towering pagoda which forms foremast and bridge of the Jap BB Fuso is characteristic, and gives most big Jap ships a top-heavy look.



Broadside, the Ise Class is spotted by separated superstructure with big guns between stack and mainmast. Note too the cluttered stack.



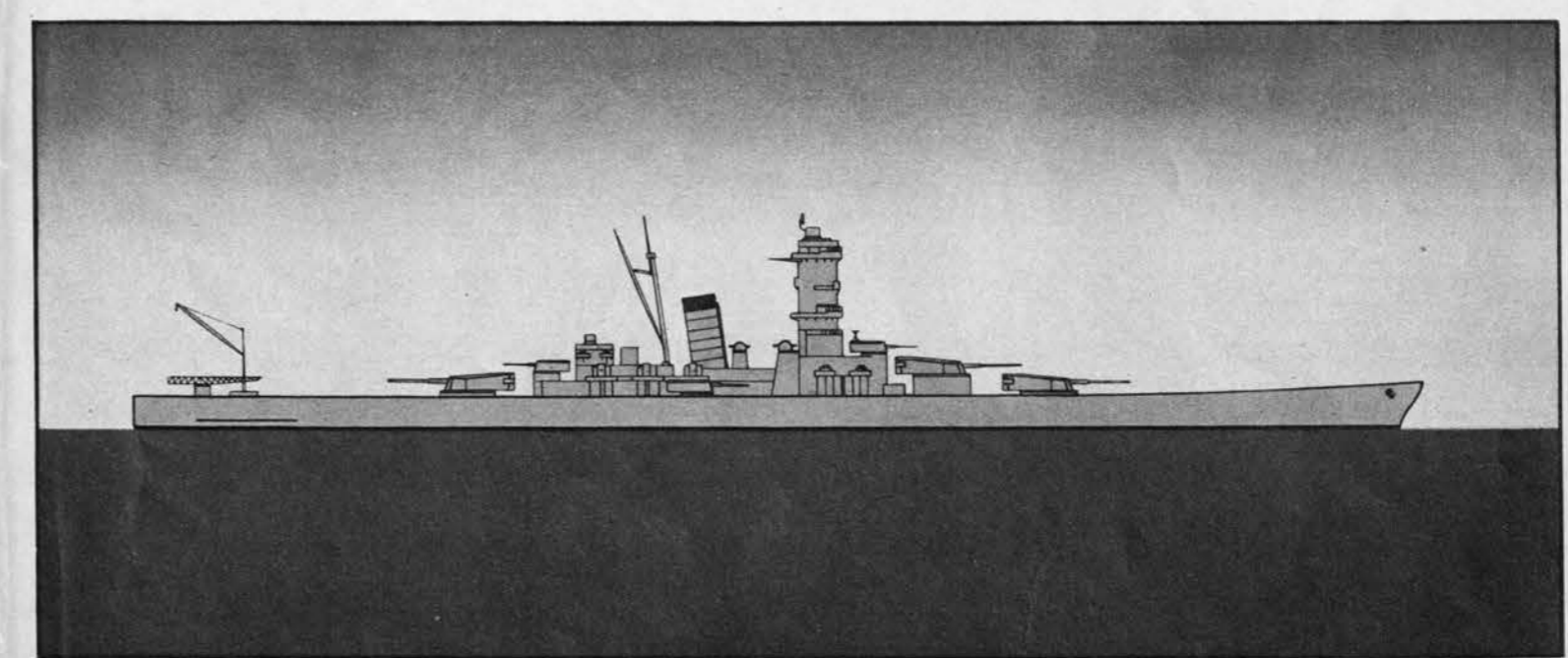
Japanese Fleet was reviewed by Hirohito on the Empire's legendary 2600th birthday. In this fine panorama, Japan's prewar naval strength



Nagato Class was Japan's best at the outbreak of hostilities. Heavy tripod foremast on which her pagoda is built is visible between the numerous control platforms. The use of tall superstructures by the Japs provides excellent visibility but limits the arc of antiaircraft fire.



is clearly outlined. In the foreground are two of her four Kongo Class BB's; behind them, two Nagatos. The CV's Hiryu and Akagi (sunk at Midway) are in background, while overhead are Mavis. Tall masts, open superstructure would immediately mark the BB's as Japanese.



Only Jap World War II BB yet found is the new, hot Yamato Class. From this provisional drawing she would seem to be a much cleaner ship than her predecessors. Her bridge is very tall but seems to lack the welter of platforms on other types. Her hull lines are unbroken.



Bulging nose of FW-190 (*far right*), prominent airscoops of P-51 and Me-109F (*left, left center*) and graceful upswept lines of P-47's

wing are important items when coming at you. Wingspans vary from 32 ft. to 40 ft., but all four have dihedral stemming from wing root.

FOUR FAMOUS FIGHTERS COMPARE NOTES

Over the waters of Choctawhatchee Bay, Fla., recently appeared one of the strangest aerial phenomenon of this war. In perfect formation two pairs of combat enemies crisscrossed the sky, buzzed fields, then broke into friendly dog fights. Eglin Field, USAAF's principal proving grounds, was flight-testing two captured German fighters, the Me-109F and FW-190, with the Army's P-47, P-51.

Eglin Field is devoted to testing every airplane prototype before it is ordered by the Army; continues to repeat-test each modifica-

tion. Captured enemy equipment is brought to Eglin's hangars for strenuous performance trials; compared with similar U.S. types.

An important by-product of this work lies in further lessons in recognition as these pictures reveal. In its January and April issues, the *Journal* pointed out differences between the P-47 and FW-190, P-51 and Me-109F respectively. These pictures pack new surprises as, for example, similarity of the P-51 and the FW-190 in distant views, smoother fairing on the leading edge of the FW-190's fin.

Viewed from below rear the 190 (*far left*) seems to resemble P-51 (*far right*) more than P-47 (*left center*) due to squareness of wing and

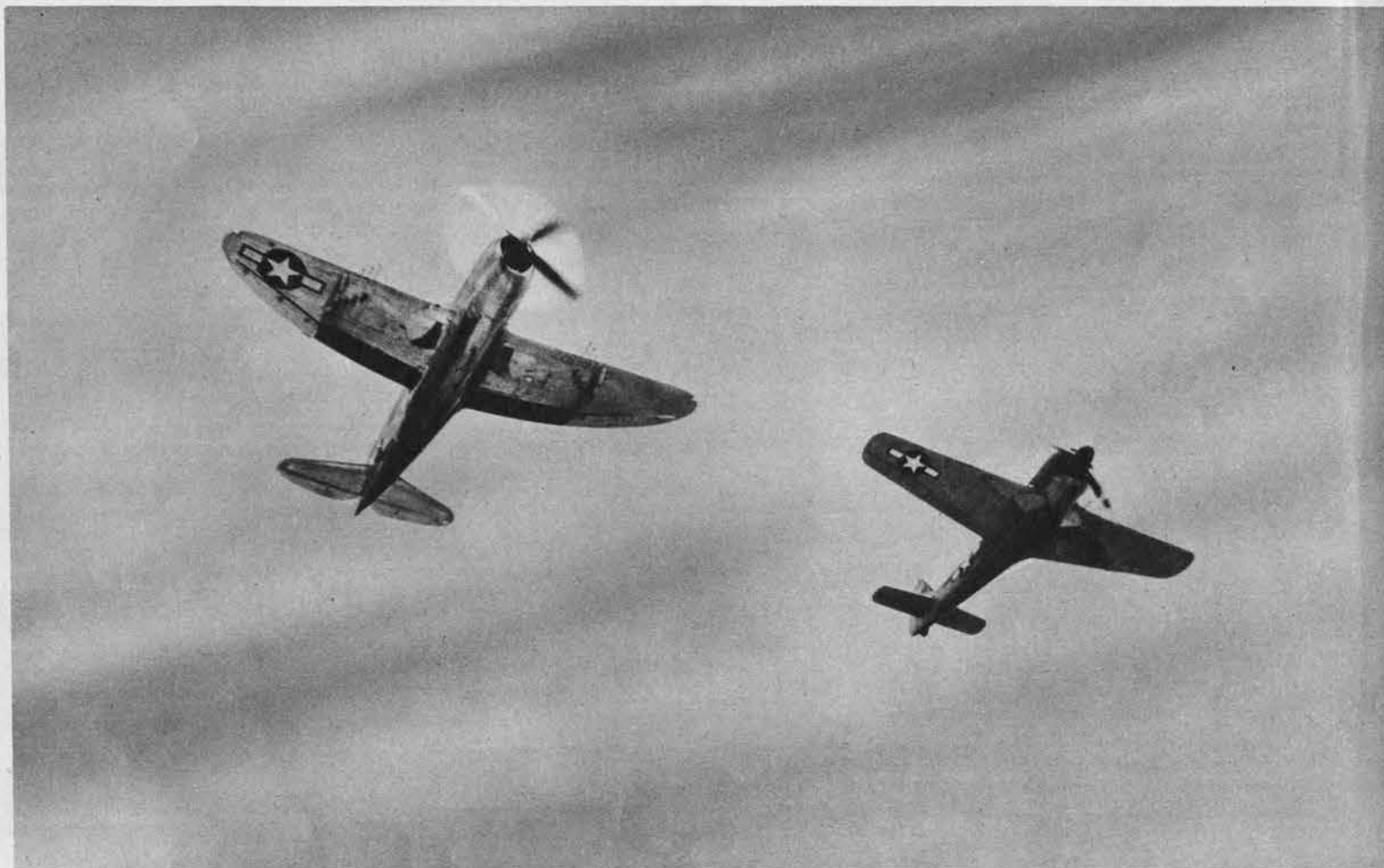
tailplane. This picture clearly shows fuselage variations—thick-bodied Thunderbolt, tear-drop FW-190, bulging P-51, and slender Me-109F.





Stacked up, the four fighters sweep low over Eglin's mile-long landing strip. The pair of radial-engine planes (*nearest to camera*) and the two

inlines cling together in close formation throughout most of the demonstration. Note three-bladed German props, four-bladed American.

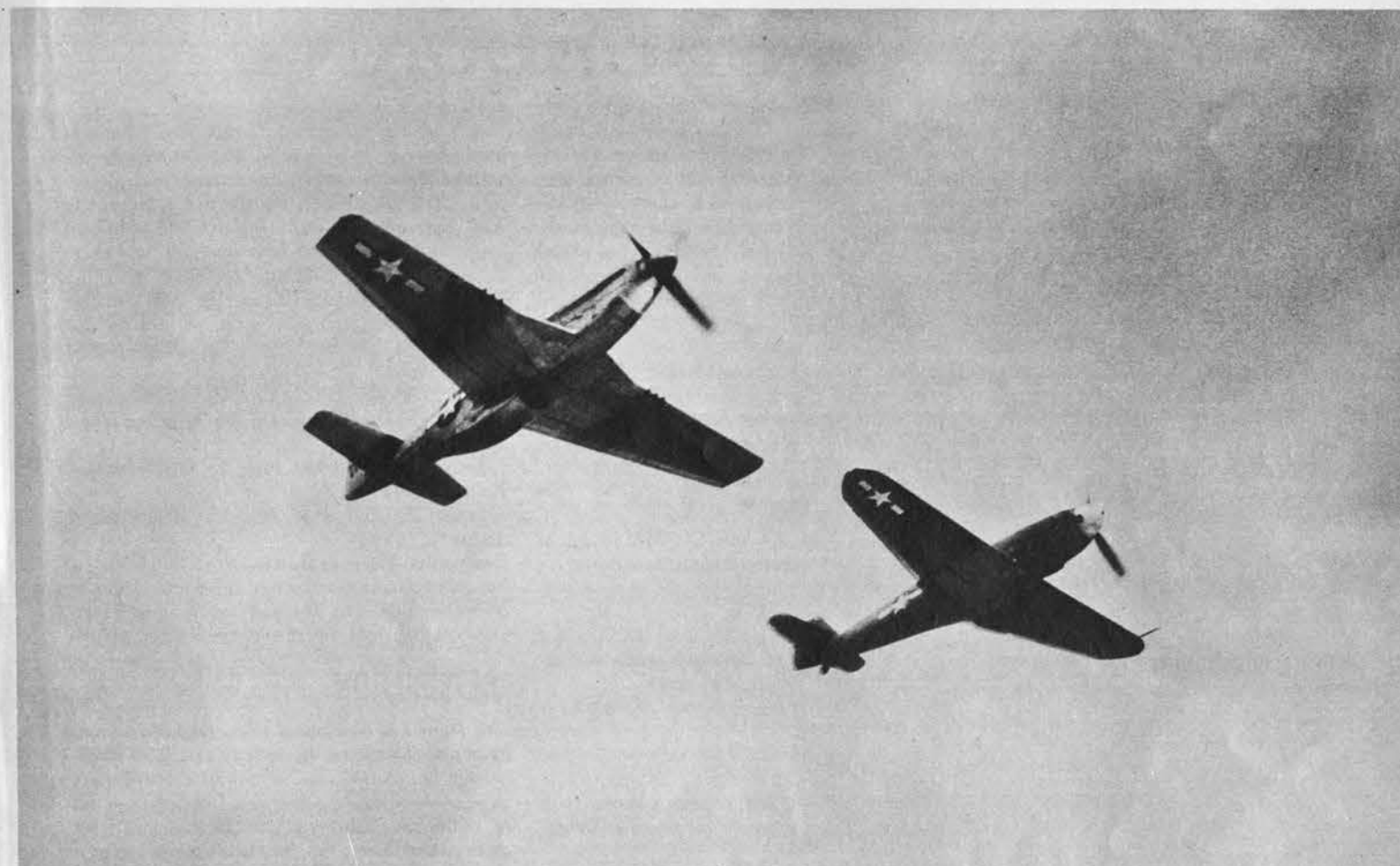


Seen as close as this no pilot would ever mistake these planes, but in split-second approaches it is a very different matter (see January

The four fighters chase tails across the Florida landscape. Thunderbolt seems about to catch up with FW-190 while Mustang waits to

Journal). The FW-190's evenly tapered wing, rectangular tailplane contrast sharply with the P-47's elliptical wing, butterfly-shaped tailplane.

close in on Me-109F. This view records astonishing differences among these four familiar fighters: the leading edge of the fin on the smaller

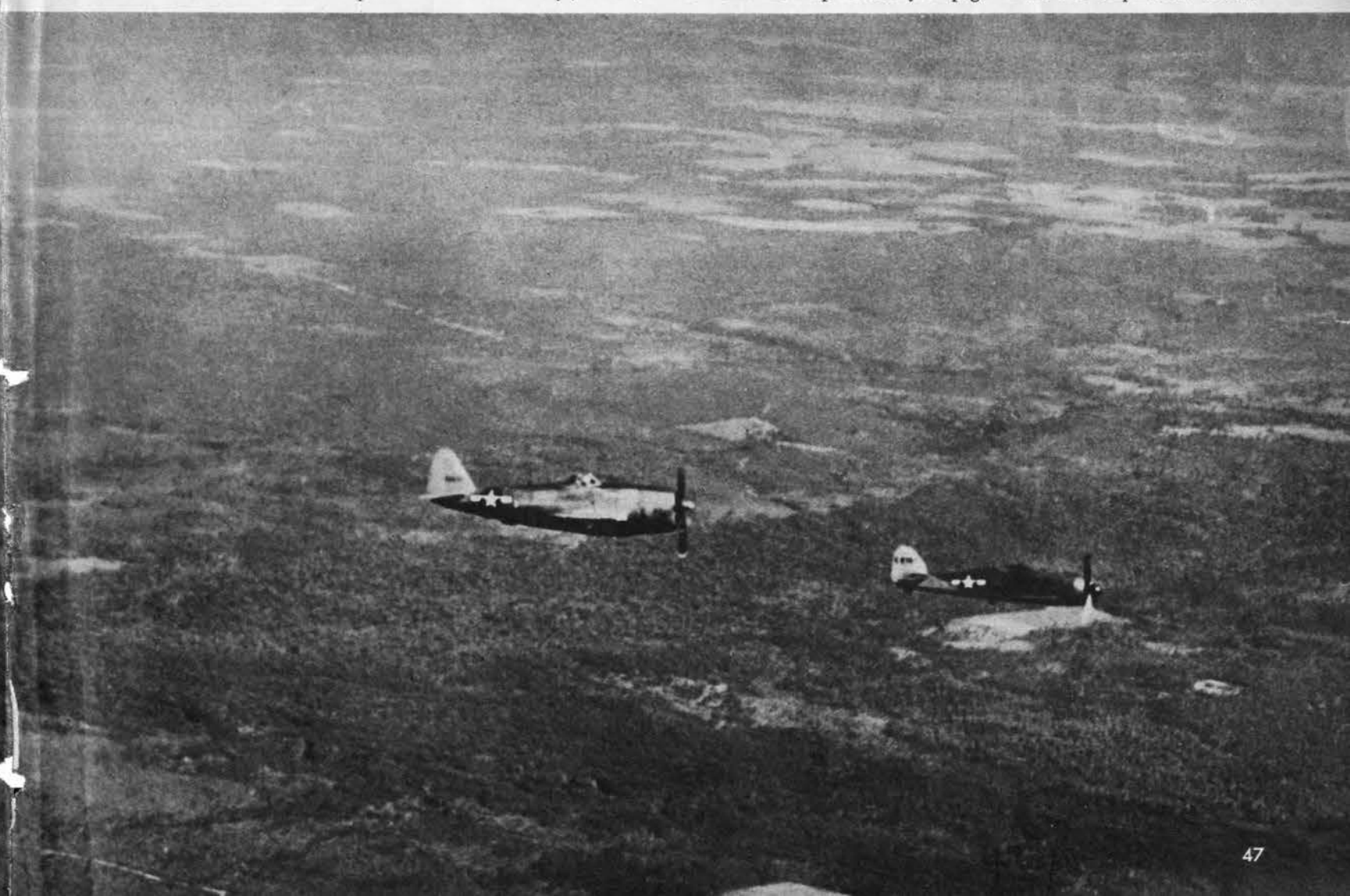


P-51's lumpy fuselage contrasts with the Me-109's streamlined body. Squared tips on wing and tailplane of the P-51 bear no resemblance to

German planes is less abrupt than on the American, and fins and rudders have a thick rounded curve at top unlike P-47's relatively pointed,

evenly tapered Me-109. The 109 has two shallow airscoops on either side, P-51 has one huge scoop. Note break in leading edge of P-51 wing.

P-51's squared-off tail assembly. The variations in fuselage construction that show up so clearly on page 44 are also emphasized below.



NEWS & MISCELLANY

NEWS

Several Sallys, Mark 2, were found to be very similar to the Mark 3. One difference is the long rear canopy on the Mark 2. In addition, fuel-tank protection was found to consist of 16-mm. kapok leak-absorbing material and 2.5-mm. rubber adjacent to the tanks. This contrasts with the 19-mm. kapok on Sally Mark 3.

Several new characteristics have been noted on Nick. The engine cowling of a Nick recovered at Cape Gloucester was of a new, low-drag design. This new cowling together with a large spinner seemed unusually streamlined and may cause Nick to appear to have inline engines when observed from some angles.

There are now 15 identified modifications of the Me-110G and seven of the Me-110H. These subtypes have been developed from the Me-110F in three main stages, the G-0, G-2 and H-2 versions.

The Me-110G-0 is similar to the 110F except for the DB-605B engines which replace the DB-601's, and small changes in equipment. The G-2 version differs from the G-0 model as follows:

Rear end of cockpit changed to accommodate the twin 7.9-mm. MG 81.

Tail unit altered to improve flying qualities with one engine dead.

Stronger struts in landing gear.

Modifications in other auxiliary equipment. The H-2 differs from the G-2 as follows:

Strengthening of fuselage and wing detachments for landing gear.

Hydraulically retractable tailwheel.

New type control column.

Changes in instruments and other equipment.

A recent crash of a long-span Do-217, sub-type K-3, disclosed new armament. Three twin 7.9-mm. MG 81's were found, presumably two lateral and one nose. There was also a single MG 81, position unknown, one MG 131/13-mm. for the dorsal turret and the same weapon for the ventral position. It is this aircraft which carries the PC 1400 FX radio-controlled bomb.

Photo reconnaissance has revealed a new six-

engine German flying boat, provisionally designated Finkewarder-193. It resembles the BV-222 in general appearance but is even larger. The wing is set farther back, thus giving the plane a longer nose. In addition, the taper on the trailing edge of the wing's outer sections begins farther outboard than on the BV-222 and the wingtips appear slightly less square.

Recent examinations have revealed that Oscar Mark 2 is fitted with a fuel cooler under the fuselage about five inches behind wing's leading edge. This cooler is believed to be very similar, if not identical, to those on Lily and Sally.

Further details of the new G-4 M-2 model of Betty have been received and are as follows:

Span: 82 ft.

Length: 64 ft., 11 in.

Weight: Somewhat greater than that of older Bettys because of increased armament, armor and self-sealing fuel tanks.

Normal cruising speed: About 215 m.p.h. at 15,000 ft.

Range: Approximately 2,500 miles maximum, with two 550-lb. bombs.

Armament: Nose, one 7.7-mm.; lateral, two 7.7-mm.; dorsal power turret, one 20-mm. cannon.

The side blisters have been replaced by open hatches.

Two 20-mm. cannon were recovered, one a new type. This confirms reports that the new Bettys have increased armament.

CORRECTION

On page 41 of the August issue Akitsu Maru should read LSV (Landing Ship, Vehicle) rather than MLC.

ANNOUNCEMENT

The Training Aids Division of the Army Air Forces is producing and distributing a series of "Recognition Instructors' Information Letters" containing data on aircraft and information and ideas on recognition training methods. Announcements concerning development and availability of new training aids are also included. These letters are distributed in bulk to the Recogni-

tion Training Supervisors in each AAF command and air force. It is planned that the Supervisors will redistribute copies of the letter to each Recognition Training Officer. Distribution is limited to AAF instructors as outlined above and additional copies are not available. Four issues of the Letters have already been distributed as follows:

Letter No. 1—dated March 10, 1944—mailed March 30, 1944.

Letter No. 2—dated April 15, 1944—mailed May 2, 1944.

Letter No. 3—dated May 10, 1944—mailed May 25, 1944 (contains data sheets on important operational aircraft).

Letter No. 4—dated June 15, 1944—mailed June 27, 1944.

Letter No. 5—dated July 15, 1944—mailed August 1, 1944.

Recognition Training Instructors in the Army Air Forces who have not received these letters should address inquiries to Recognition Training Supervisors of their respective commands or air forces.

DISTRIBUTION

The *Journal* is distributed to particular activities in all armed services. It carries a restricted classification but should receive as wide a distribution as possible within the services. Limited numbers of additional copies are available. Requests for them and comments on the *Journal* should be sent through channels as follows:

From: Army Air Forces Activities

To: Training Aids Division

1 Park Avenue, New York, N. Y.

From: Army Ground & Service Force Activities

For copies, to: Appropriate A. G. Depots

For information, to: Training Literature & Visual Aids Division, Army War College, Washington, D. C.

From: U. S. Navy Units & Activities

To: DCNO (Air)

Training Literature Section

Navy Dept., Washington, D. C.

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QUIZ ANSWERS

QUIZ NO. 1

- Three U.S. M-4 tanks; one M-7 105-mm. howitzer at right
- German eight-wheeled armored car; four-wheeled armored cars; staff cars
- German PzKw III tank; Russian KV-1 heavy tank
- British Churchill infantry tanks
- Three Japanese light tanks 2595; one medium tank 2597 at right

QUIZ NO. 2

- Natori Class CL
- Asashio Class DD
- AM-7 Class (2)
- Aoba Class CA's
- Escort Gunboat (PF)
- Mutsuki Class DD
- Nachi Class CA

- Wakatake Class ODD
- Natori Class CL

QUIZ NO. 3

- Lilys
- Dinah
- Nick
- Lily, Sally, Oscar
- Helen
- Lilys
- Lilys
- Betty

QUIZ NO. 4

- Spitfire
- Oscar
- Kate
- P-47
- Lily
- Me-210
- Ju-88
- Hamp
- FW-190
- A-20
- 11-1 & 2
- Me-109F
- DB-3F
- SB2C
- F4U

CREDITS

The pictures used in the *Journal*, unless otherwise specified (see below), came from the Allied Armed Services.

Cover—Margaret Bourke-White

2—First row, War Pool (Acme Photo by Stanley Troutman); second row, Eur.; third row, Sovfoto; fifth row, War Pool (Acme Photo by Stanley Troutman)

5—Otto Menge

10—Bot. It., USAAF Photo from Acme

12—Bot., George Silk

13—Top, Int.; bot., Carl Mydans

14—Top It., Acme

16—Top, Associated Press; (2); bot. rt., Eur.

17—Top, Eur.

18—Bot., William Vandivert

19—Margaret Bourke-White (3)

20—Top, William Vandivert

21—Top, William Vandivert (2); bot. It., Eur.

24—Bot., Johnny Florea

31—Top, Int.; bot., USAAF Photo from Int.

36—J. R. Eyerman

42—Top, Courtesy of Movietone News

Abbreviations: Bot., Bottom; Lt., Left; Rt., Right;

Int., International; Eur., European



The Piper Grasshopper (L-4), shown on this month's cover, was spotting enemy positions along the Volturno River in Italy when photographed by Margaret Bourke-White of *Life*.

LIGHT BOMBER



U.S.A.



DISTINGUISHING FEATURES: Shoulder-wing monoplane with two radial engines in unusually long, underslung nacelles. The wing has slight dihedral, even taper on leading and trailing edges and blunt tips. Its main recognition feature is the rectangular forward section of the fuselage. The straight line along the belly breaks just behind the nacelles' rear tips to provide space for a turret. Fin and rudder is tall and angular although leading edge of the former has graceful forward sweep. Tailplane has pronounced dihedral.

INTEREST: This newest U. S. attack plane combines the withering firepower of the B-25H with the speed and versatility of its Douglas ancestor, the A-20. Several different noses can be used interchangeably on same fuselage. One is of Plexiglass for the bomber version. In the attack version a solid nose with different combinations of .50-cal. machine guns and with 37-mm. and 75-mm. cannon can be installed. Normal bomb load is 1,200 lb. but as much as two tons can be carried. Its official name is "Invader," formerly used for A-36.

AUGUST 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-39
NAVY DEPARTMENT BUAE 1

A-26



SPAN: 70 ft.
LENGTH: 49 ft., 11 in.
APPROX. MAX. SPEED:
SERVICE CEILING:

RESTRICTED

NOTE: This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

FIGHTER



U.K.



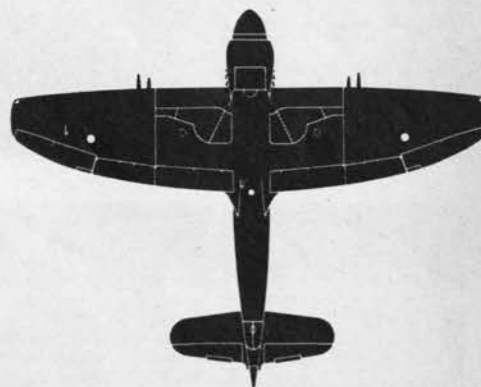
DISTINGUISHING FEATURES: Low-wing monoplane with single inline engine. This engine, the 2,200-hp. Napier Sabre, has its radiator intake in the large bulge beneath the plane's nose. Though typically Hawker in design, the Tempest V has two novel points not incorporated in the earlier Hurricane and Typhoon. One is the elliptical wing; the other, the fin curving forward as it fair into the fuselage. The wing's inboard panel is horizontal, while the outboard panel shows moderate dihedral. Note blister-type cockpit cover.

INTEREST: The Tempest is the latest RAF fighter to go into action and is evidently fully satisfactory to an air ministry which demands pursuit planes second to none in speed, firepower and maneuverability. Unlike the Typhoon, which turned out to be one of the war's finest low-altitude planes, the Tempest is designed for medium-altitude fighting. It first appeared in combat last June and because it is an extraordinarily stable gun platform, it has been very valuable in defending southern England against robot bomb attack.

AUGUST 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-39
NAVY DEPARTMENT BUAE 1

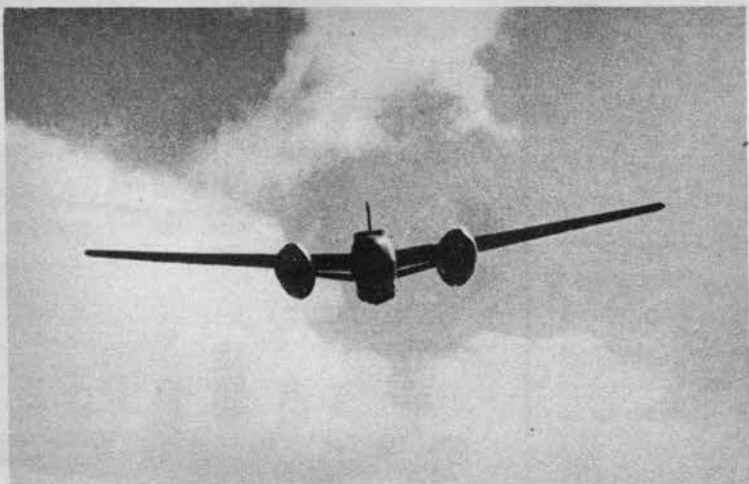
TEMPEST V



SPAN: 41 ft.
LENGTH: 33 ft., 8 in.
APPROX. MAX. SPEED: 430 m.p.h.
SERVICE CEILING:

RESTRICTED

A



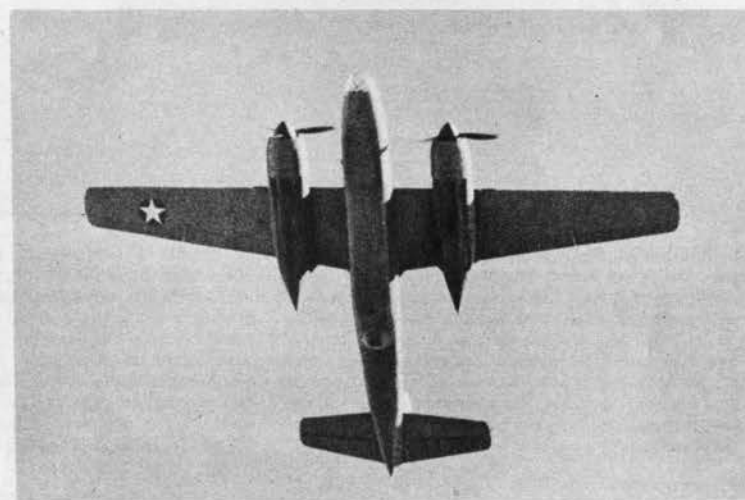
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C



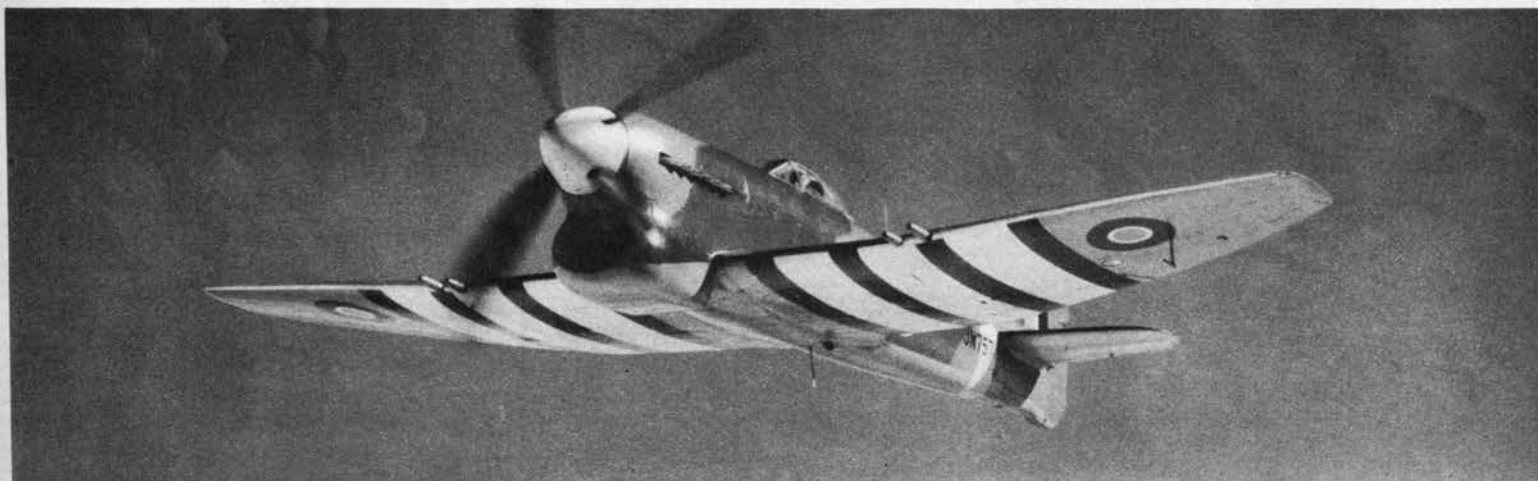
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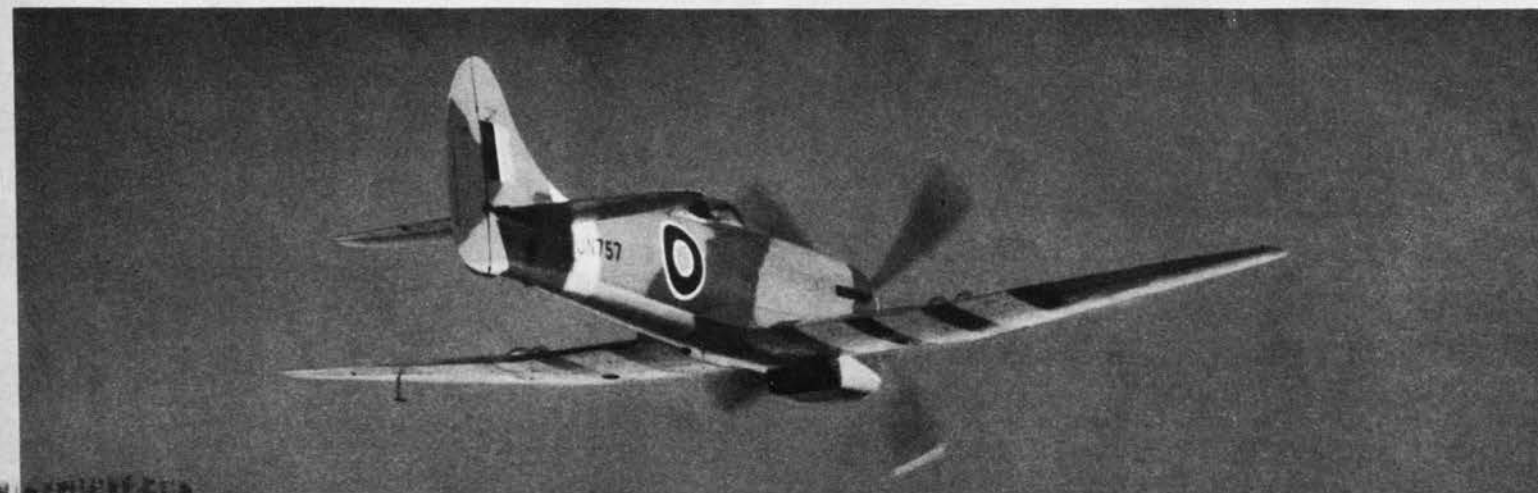
↑ **A-26** (*above*) represents furthest development of flying artillery up to now. It can carry enough gun power to wreck any armored equipment and should, therefore, fit perfectly into the plane-tank team which has paced many U.S. offensives.

↓ **TEMPEST V** is Hawker's latest fighter. It promises to equal the fine records of Hurricane and Typhoon. With most other fighters being concentrated for escort and ground-attack, Tempest and Spitfire have become the defensive stand-bys.

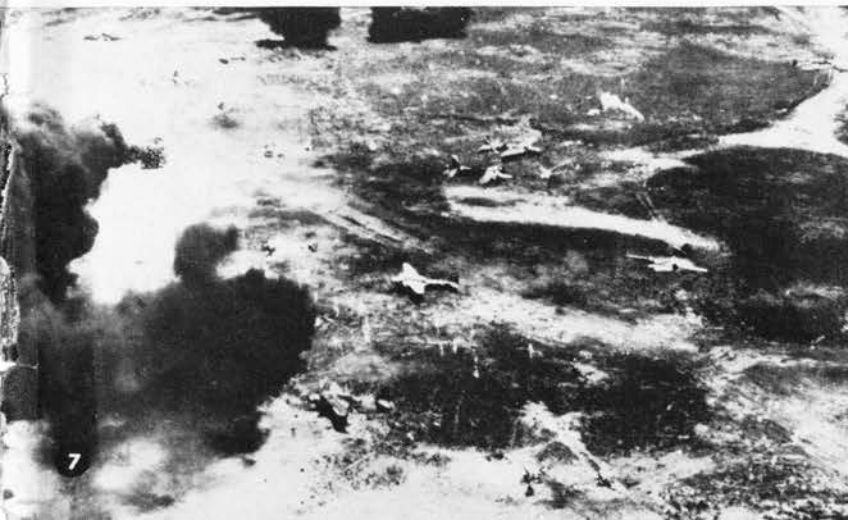
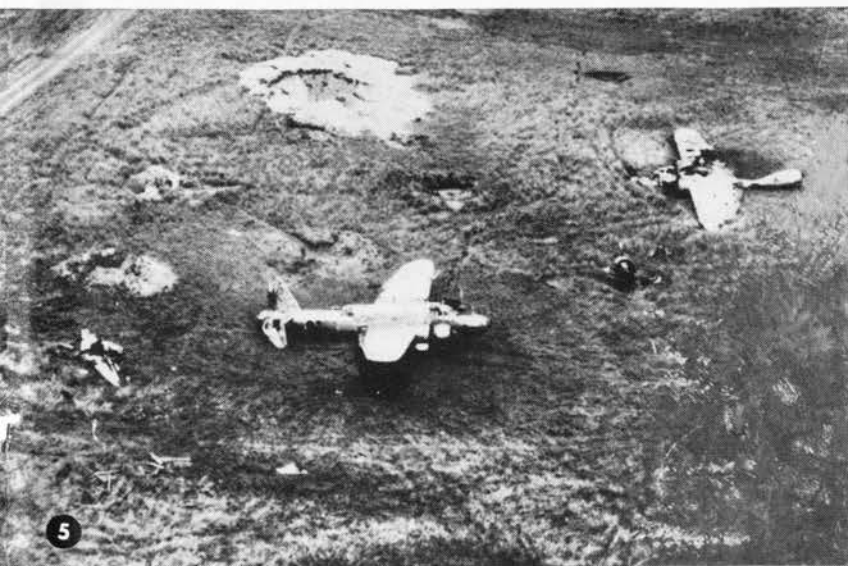
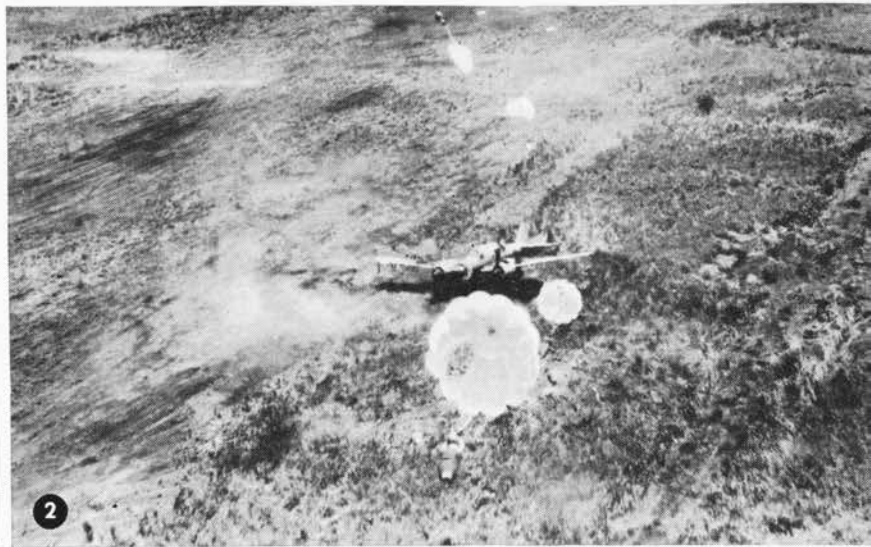
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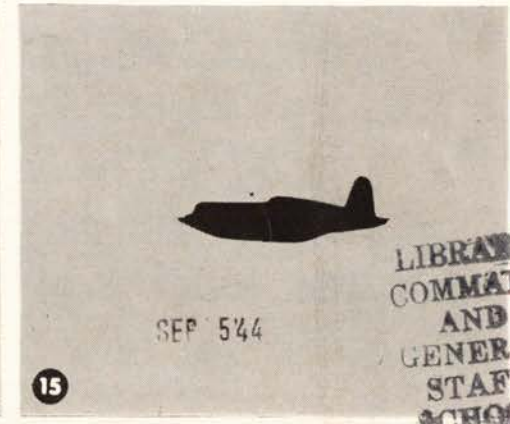
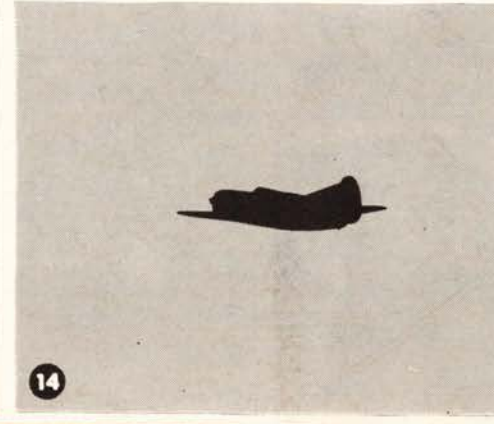
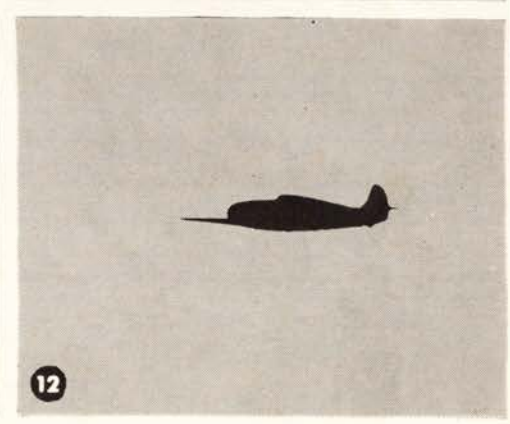
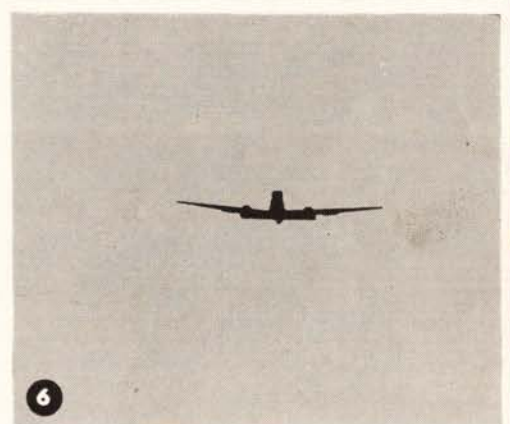
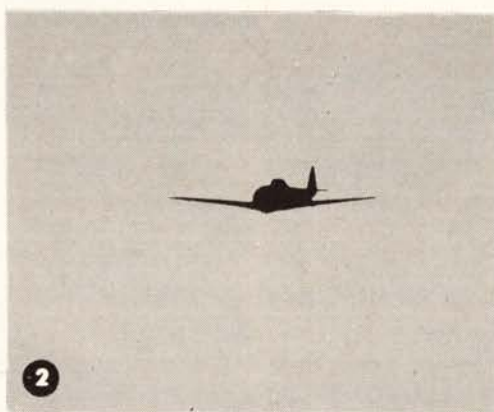
B



QUIZ NO. 3: JAPS CAUGHT ON THE GROUND



QUIZ NO. 4: SINGLE AND TWIN ENGINE

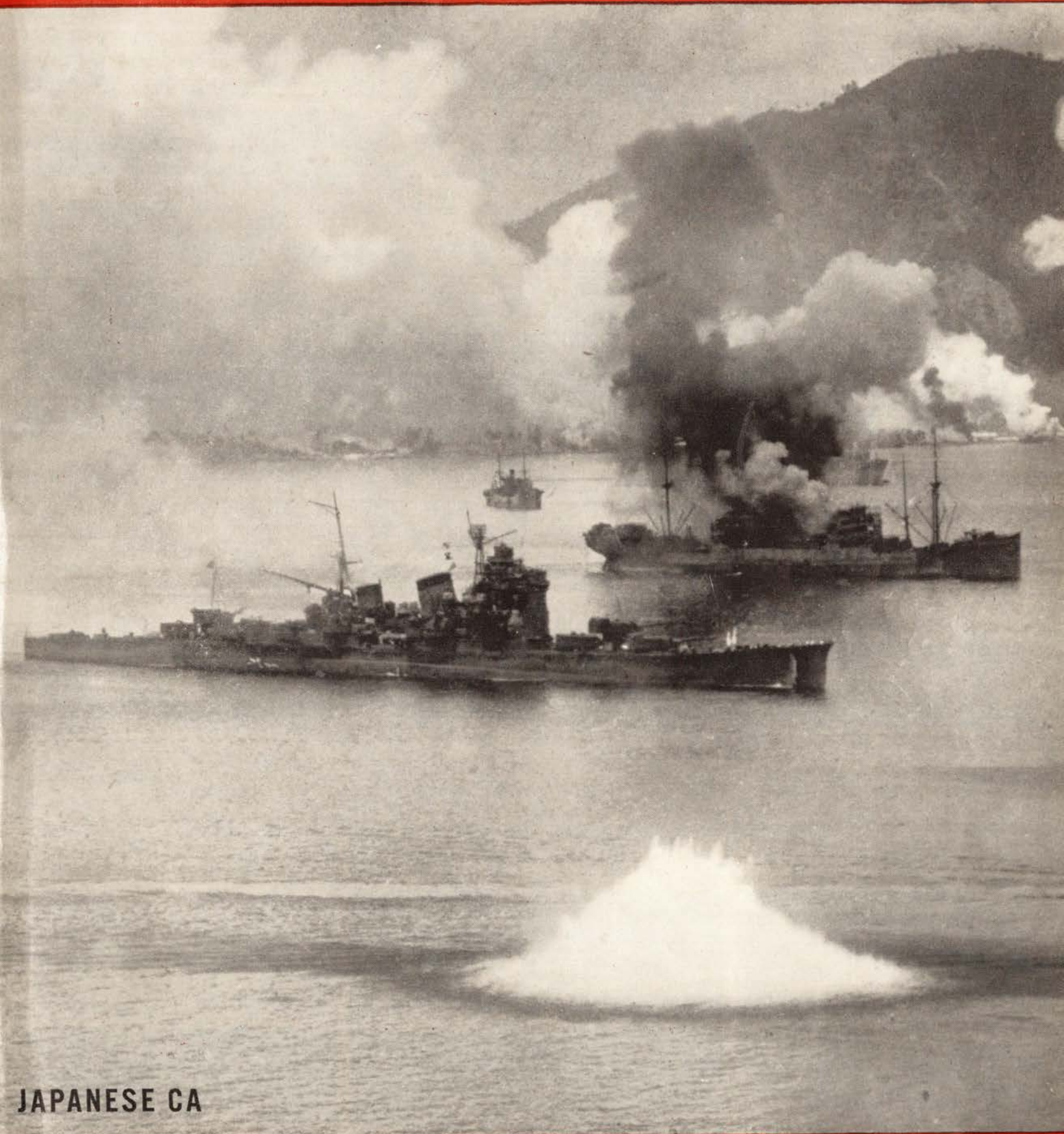


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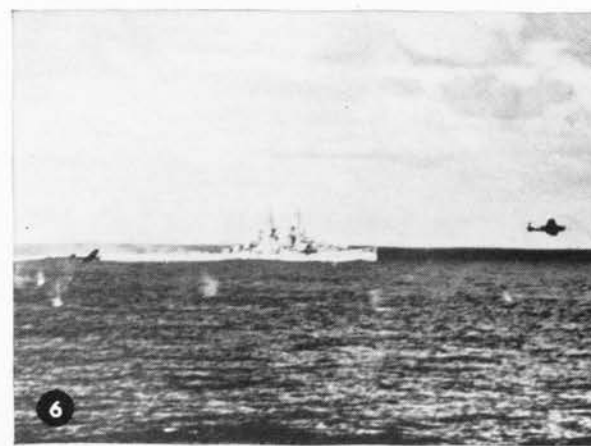
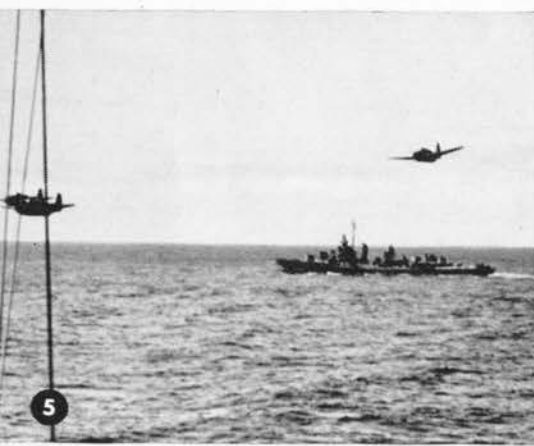
JAPANESE CA

~~RESTRICTED~~
OCTOBER, 1944
NUMBER 14

WAR DEPT.
NAVY DEPT.



QUIZ NO. 1: PLANE-SHIP COMBINATIONS





NEW ZEALAND AIRMAN BRUSHES UP ON HIS GUNNERY IN TRUCK-MOUNTED TURRET OF NAVY'S MOBILE TRAINING UNIT AT ESPIRITU SANTO

MOBILE TRAINING

When a fighting man enters a theater of operation he is usually considered to be fully trained. No regular provision is made for his further military education. But in two closely related fields—gunnery and recognition—the men's work is never done. Whenever they are inactive, whether from being held in reserve, resting from an exhausting series of missions, or even on long quiet sea patrols, their ability to recognize quickly and shoot straight begins to deteriorate. Only by constant practice can they keep their eyes and hands at a deadly combat pitch.

West of Pearl Harbor, refresher gunnery and recognition training is being made available to airmen of all Allied forces by the U. S. Navy's Mobile Training Units. Four of these are large ship-transported groups consisting of three officers and 15 men. They are equipped with all the standard equipment for gunnery and recognition training—flash and slide projectors, the

3A2 gunnery trainer, operating and cut-away turrets for live ammunition firing, skeet equipment and so forth. They are assigned to big shore-based outfits to serve whole areas, including Marines, Army, Australians and New Zealanders as well as Naval Aviation units.

Supplementing the large units are several smaller airborne teams of one officer, one enlisted man. These supply flexibility to the program by hopping about for two- or three-week stays wherever smaller groups need a quick refresher before going into combat. These teams do not carry live firing equipment but have the 3A2 trainer and a complete recognition setup fitted into a PB4Y. Special visits by these units may be requested by any Allied air, ground or ship commander.

On this and the following two pages the equipment of the larger units is shown in use at some of the Navy's big Pacific bases.

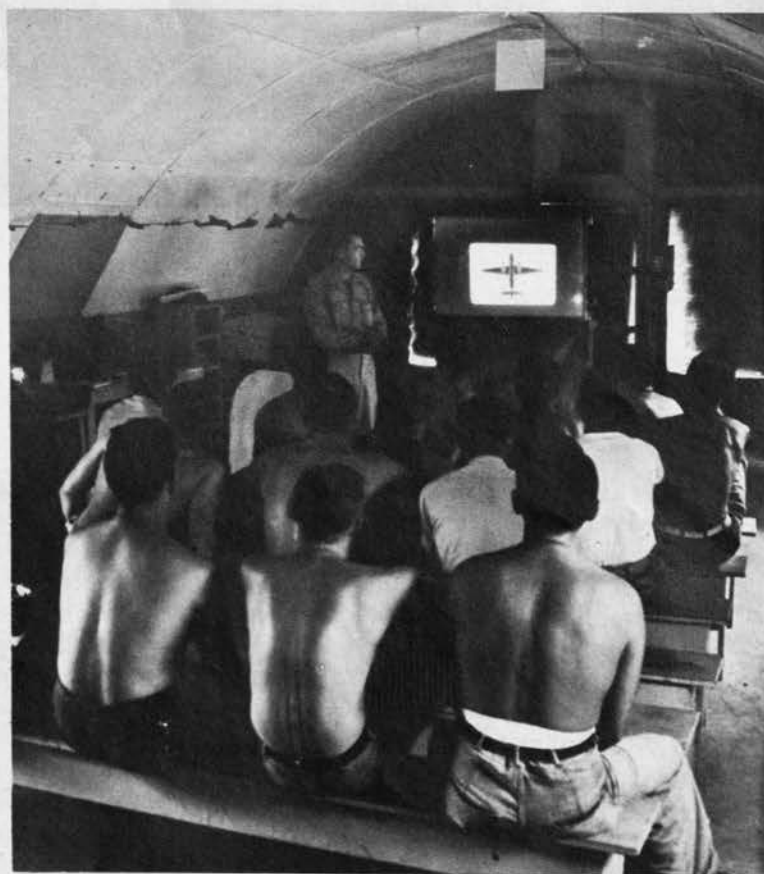


Battery of turrets duplicates the gun positions and the equipment on most Allied aircraft. The SBD at the left tows a sleeve target past the

installations. As the towplane passes safely out of the line of fire, the man on the control tower signals gunners to open fire on the sleeve.



Marine gunners in a Quonset-hut classroom concentrate on the shadowgraph screen as the MTU instructor flashes models before them.



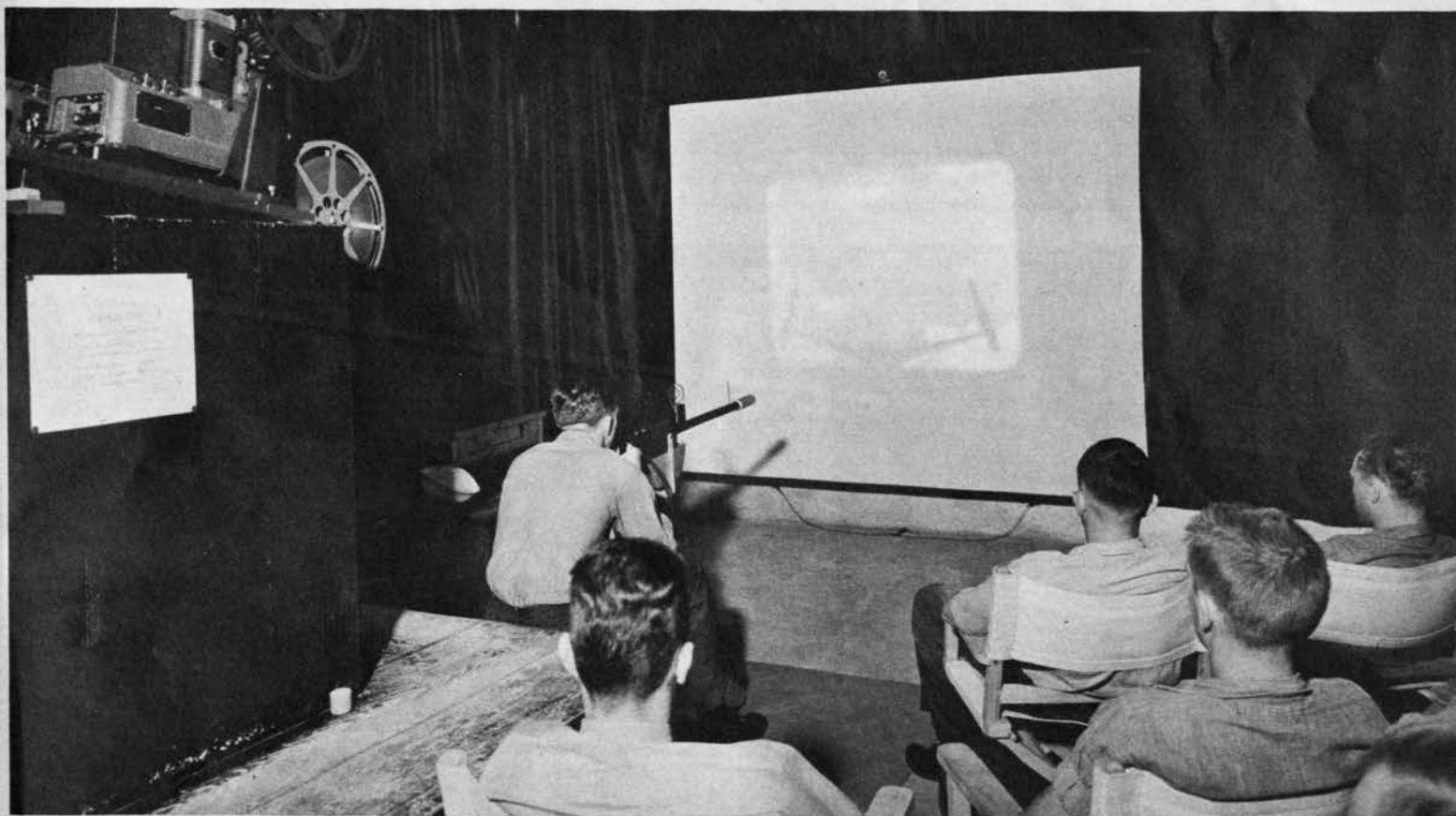
Plan view of Betty is thrown on the screen so that the recognition officer can point out features that identify this fast powerful enemy.



Target-towing SBD sweeps overhead as gunners open fire. This is straight gunnery training. Recognition is taught by the other devices shown below.



Skeet-shooting supplies recreation and keeps gunners' eyes in shape. Each big MTU carries skeet equipment to Navy bases.

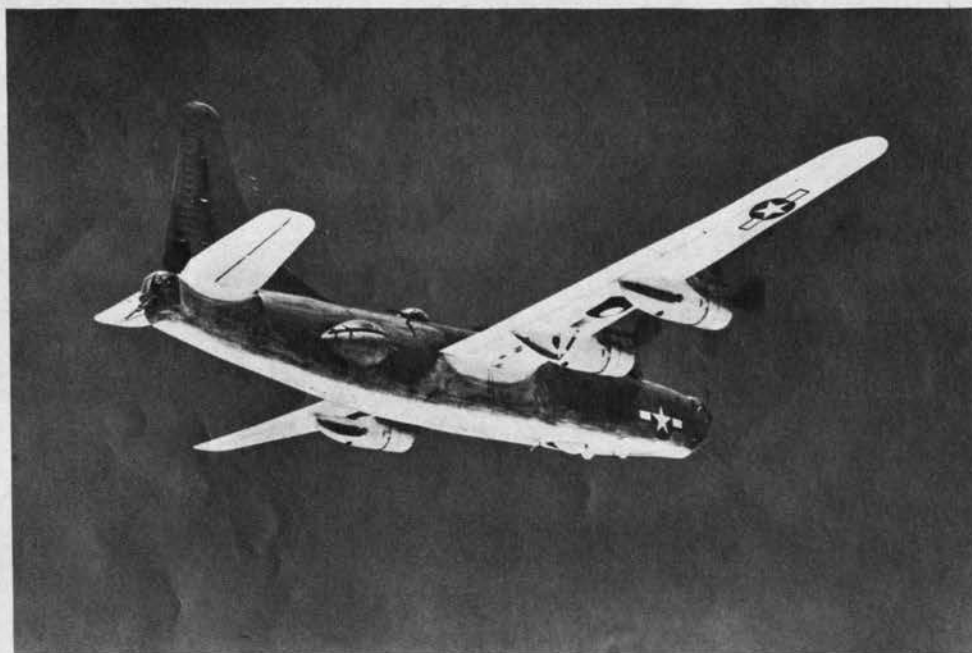


3A2 gunnery trainer combines recognition and range estimation instruction for these student Navy gunners. The student fires when he

thinks that the airplane is in range and in his sights. If he has judged the range correctly, the gun rattles realistically; if not, a bell sounds.



The new Liberator's lines are more familiar when seen from below. Contrast between its graceful wing and the rectangular fuselage still marks the plane as descendant of the B-24.



Teardrop side waist turrets, resembling the PBY's side gun blisters, are a new feature in the Liberator's appearance. Earth-sky camouflage scheme outlines the long, narrow wing.



PB4Y-2'S CENTERED WING, LONG NOSE, LARGE SIDE TURRETS AND TWO TURRETS ATOP FUSELAGE DISTINGUISH IT FROM EARLIER LIBERATOR MODELS

PB4Y-2

Soaring fin and rudder change appearance and personality of the Navy's workhorse bomber

Latest and most radical development of the B-24 Liberator line is the Navy's PB4Y-2, now the most formidable bomber in use by Naval Aviation. In its new tail structure it echoes the Liberator Liner presented in last month's *Journal* and offers a foretaste of the Army's great new heavy bomber, the B-32 Dominator. In its over-all appearance, it fits into the general trend of latter-day U.S. bombardment aviation.

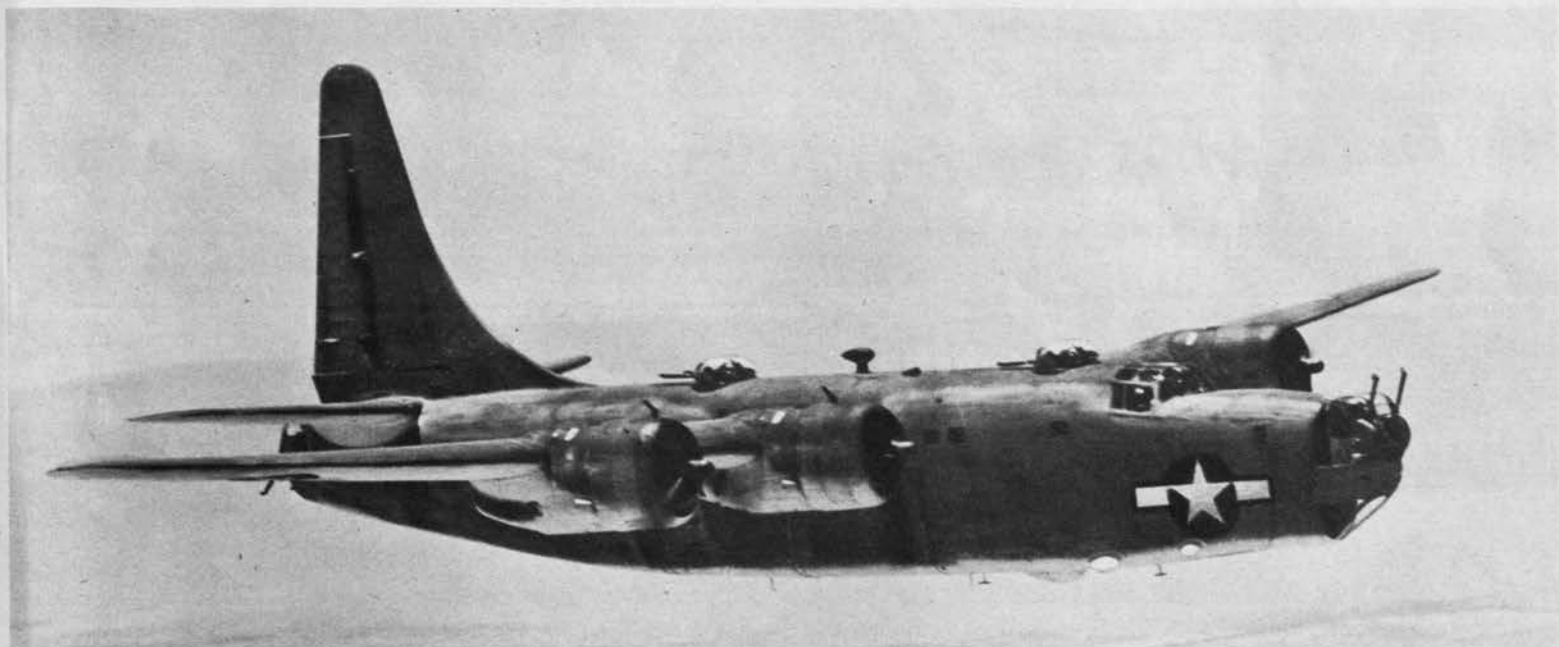
Though many features of the original Consolidated design remain, the personality of the new Liberator is entirely different from that of the original B-24. The dominating feature of the new plane is the huge fin and rudder which soars skyward aft. The twin platters of the B-24 tail have disappeared and the tailplane now tapers on both edges. The Davis wing has been retained but a 7-ft. extension has been added to the fuselage forward of the wing so that the plane now has a much longer nose. Despite the addition of a new turret and side blisters, the fuselage retains its familiar boxy lines.

The new Liberator is equipped with four Pratt and Whitney double Wasp engines and carries a much heavier armament than its predecessors. The addition of still another Martin-designed turret aft of the wing and two teardrop side waist turrets in place of hand-held side waist guns increase the field of fire.



New features of the PB4Y-2 are all visible in this picture. The high, sweeping fin and rudder, two top turrets and heavy Liberator lines

all add up to PB4Y-2. This new airplane, the Navy's greatest bomber, has the advantage of heavier armament and armor, and more speed.



GRACEFUL PB4Y-2 TAIL IS NARROW, RISES TO GREAT HEIGHT. IT FAIRS EVENLY INTO FUSELAGE JUST ASTERN OF THE REAR MARTIN TYPE TURRET



Broad capped stack, characteristic of South Dakota and Tennessee Class battleships, fair into the tower bridge of the rebuilt West Vir-

ginia. Twin turrets, forward and aft, carry 16-in. guns. An OS2U can be seen on the fantail catapult, while another is on deck alongside turrets.



Dual-purpose mounts, four on each side, provide West Virginia with modern AA protection. Similarity to the refitted Tennessee in this and

other details is so marked that for recognition purposes the West Virginia should now be taught with this class rather than with sister ships.

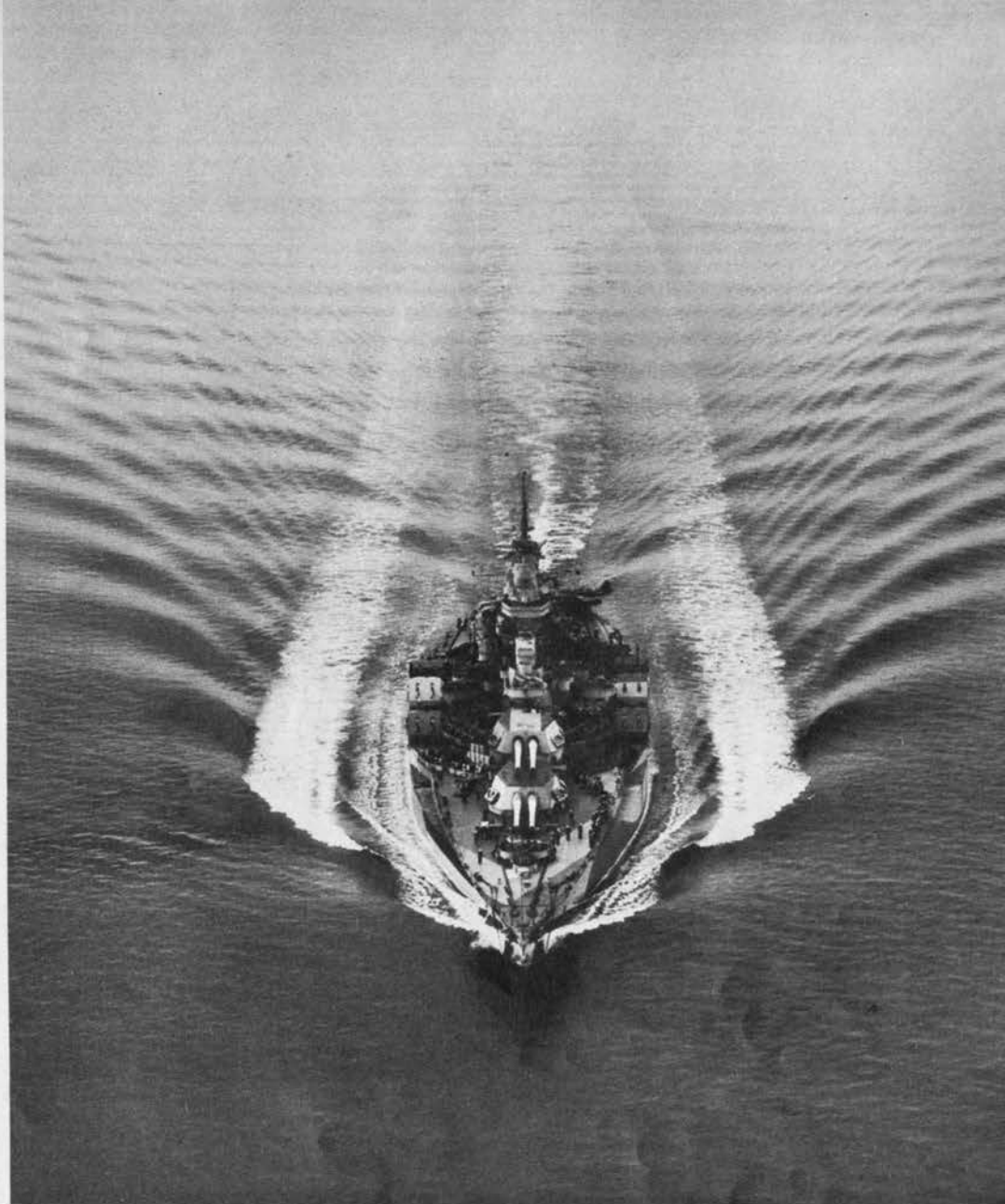
OLD WEST VIRGINIA GETS FACE LIFTED

Among the first ships claimed sunk by the Japanese at Pearl Harbor was the U.S.S. West Virginia. Though badly battered it was still salvageable and in a refitted version has now rejoined the fleet—cleaner, trimmer, more efficient than ever before.

Before the completion of the North Carolina in August 1941 the West Virginia and her sisters Colorado and Maryland packed the U. S. Navy's Sunday punch in their 16-in. rifles. Outgunned only by Great Britain's Nelsons, they gave us the power to stand up against Japan's Nagatos.

Before the war the West Virginia was virtually identical to the Tennessee Class in appearance and dimensions but differed in main armament, the former carrying eight 16-in. guns and the latter twelve 14's. They were typical of our prewar fleet with their thin twin stacks set between enormous cage masts, their secondary armament in casemates or single mounts.

The refitted West Virginia, Tennessee and California, now somewhat resemble the powerful, compact South Dakotas. From a distance they can be distinguished from the new battleship classes by their four turrets and by the fact that they are shorter and tubbier. While she is grouped with the Tennessees for recognition, the West Virginia retains her main armament of prewar days.



Enormous beam of the West Virginia leaves a broad parallel wake in a calm sea. Blisters which give her this bulk cut her speed somewhat but pay off in underwater protection.



Pyramidal superstructure of West Virginia makes her look like a fore-shortened South Dakota. But unlike the new flushdeck BB's, the older

ones have a declivity break just aft of the dual-purpose battery. Re-built ships can also be distinguished by their old-style clipper bows.



Nazi SP 75-mm. guns on the PzKw 38 chassis cross the Brenner Pass. This aerial view shows boxlike, open-topped crew compartment with sloping sides cut down at the back.

NAZI POWER

An old SP gun is revamped & their Panther wins praise

The Germans seem to turn out self-propelled guns in more variety than any other type of armored vehicle. In every campaign they appear with a new model which frequently is a modification of a gun and chassis already in use. One such modification is shown on this page. It is a new version of the self-propelled 75-mm. Pak 40 on the Czech PzKw 38 chassis, a combination of gun and chassis that dates back to 1939. In the new version, the crew compartment has been redesigned, rearmed, enlarged and moved to the rear. The gun, too, has been moved rearward so that its muzzle barely overhangs the bow of the chassis. The older style crew compartment—more appropriately called a gun house—is a three-sided, cone-shaped structure affording minimum protection. Pictures of it have appeared in the *Journal* for December 1943 and September 1944. First *Journal* picture of the newer weapon appeared last month.

The bitter tank warfare in Northern France has given observers an opportunity to study the effectiveness of Anglo-American and German tanks. An outstanding performer has been the German Panther, PzKw V, the most important Nazi medium tank. Heavier than most mediums, it has 4-in. armor on the front of the turret. Its long-barreled 75-mm. gun is a weapon of extremely high velocity. Pictures of the Panther in France appear on opposite page. It was introduced last summer on the Russian front and incorporates some of the best features of the Soviet T-34.



Slab-sided crew compartment of SP "75" is set far back. The Czech chassis has a short wheel base, four large Christie-type bogie wheels.



Sloping gun shield of SP "75" projects from gun house. On either side are pieces of track. Rod on the gun house is for crew's support.



Panther design was influenced by that of Russian T-34. Bow is long and sloping. Forward set of turret makes tank seem to lunge ahead.



Star performer in Normandy, the Panther mounts an 18-ft. high-velocity 75-mm. gun. Broad track is supported by overlapping wheels.



Aerial bombardment destroyed German tanks along the hedgerows near St. Lô. All but one (*second from left, a PzKw IV*) are Panthers.

Their conical cupolas jut out from the left rear of a flat-topped turret. Sides of hull are straight, with beveled edges; rear is undercut.



Deeper fuselage and flatter belly line of the new L-5B result from its adaptation to new duties. Greater cargo capacity and service as a

supplementary ambulance plane are now possible. Because of its versatility, the L-5B has been adopted as the standard AAF liaison plane.



Staggered control platforms on Hayataka's island give it a definite Japanese character. Sheared-off flight deck and large bulge below the island are conspicuous from this angle.

HAYATAKAS HAVE UNIQUE ISLANDS

The two Hayataka Class Japanese CV's have unique, pagoda-like islands which are much larger than those found on other Japanese carriers. The unusual cantilever islands rise from the flight decks and tower both upward and outward, giving the impression of staggered steps, somewhat resemble pagoda fore-masts of Jap BB's.

Converted from the Nippon Yusen Kaisha passenger liners Kashiwara Maru and Izumo Maru in 1942, the Hayataka and its sister ship, the Hitaka, have seldom been sighted by U. S. forces. During the battle for Saipan they were both critically injured and one of them was accredited as sunk.

Engineered to produce 28 knots, neither ship would probably do better than 23. Both are 745 ft. long and displace 28,000 tons. Their flight decks sheer off abruptly aft of the bow. Plane complement is believed to be about 60 aircraft.

The Hayataka's island rises starboard just a little forward of amidships. From a considerable distance the carrier might be mistaken for a British carrier of the Illustrious Class.

ARMY'S L-5B HAS MORE CARGO ROOM

Latest version of the "Flying Jeep" is the new and more versatile L-5B. It is heavier than L-5 and has thicker fuselage which allows increased rear space for cargo or a litter. L-5B is practically identical to the older L-5 in design, the chief difference being the L-5B's greater depth and flatter belly line. This extra capacity gives L-5B a greater utility value. The L-5B will be the most important Army Air Forces operational liaison type.

Liaison aircraft can alight in a small clearing and carry wounded men or vital cargo away to safety, can hover over a confined area to spot artillery fire. In Burma they were used as supply transports on short hops, bringing badly needed equipment that could otherwise never have been delivered.

Although unarmed and unarmored, the casualty rate amongst these small planes has been comparatively light. Vulnerable as they are to small-arms fire from the ground, L-planes are adept at escaping attacking fighters. Their size permits maneuvering at low levels which the big planes dare not imitate.



L-5B's thicker body (lower picture) may be contrasted with the tapering fuselage of L-5 (top). Though the change is important operationally, the two planes still look much alike.



Lines of a passenger ship are evident when the Hayataka is viewed from a reasonably close range. These are quite distinct from the busi-

nesslike lines of ships which were originally constructed for war service. Many Japanese aircraft carriers have no island superstructure.



NEWEST U. S. TRACKED VEHICLE, M-29 COMPLEMENTS THE JEEP ON THE WESTERN FRONT, CAN CARRY MEN WHERE EVEN A FOOT SOLDIER CAN'T GO



Agile on land as well as water, the M-29 can negotiate almost any grade. Weasel's large capacity is apparent in the open-topped box hull.

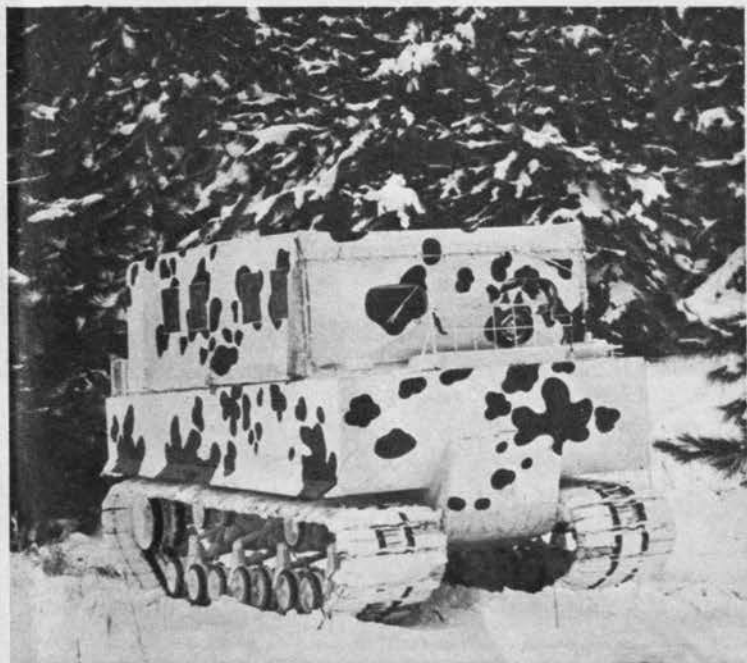
AGILE CARGO & PERSONNEL CARRIER NOW IN FRANCE

Among the many surprises encountered by the Germans in France is a new U. S. cargo- and personnel-carrier. This small vehicle, known officially as the M-29 and affectionately as the Weasel, has helped speed the movement of supplies at beach-head areas. Its exceptionally light weight is carried on two 15- to 20-in. tracks, giving it a ground pressure per square inch of only one-fourth that of a fully equipped infantryman. It can carry a sizable load through ice, snow, mud or high water that would stop the unassisted foot soldier.

In appearance, it is literally a box on powered tracks. Its suspension system has eight small paired bogie wheels, two smaller return rollers, a rear drive sprocket and a large front idler to each track. Amphibious model (M-29C) is transformed into a boat by angular pontoons forward and aft and appropriate steering gear. It can make 4 m.p.h. in water and 35 m.p.h. on land.



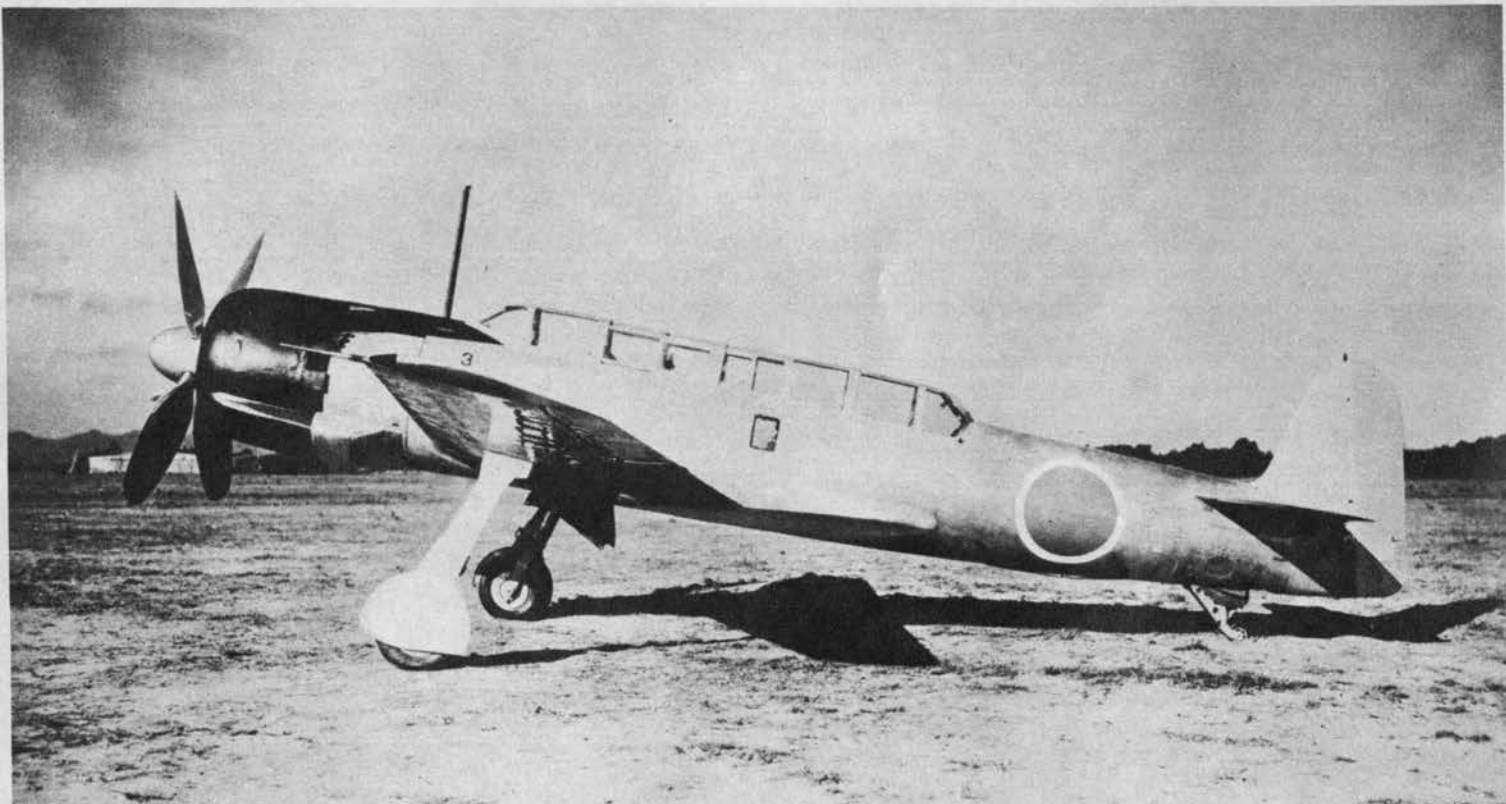
TWO WEASELS CARRY U. S. PLATOON THROUGH FRENCH VILLAGE AS ALLIES MOVE UP. CARRIER SEEMS SMALL COMPARED TO HULKING SOLDIERS



Like its namesake, the Weasel adopts protective coloration in snow. Raised sides and special heaters permit it to operate in extreme cold.



Removable pontoons make the M-29C model look like smaller Dukw. Splash guards protect driver and cargo from water churned by track.



JAP NAVY'S NEWEST AIR THREAT IS MYRT 11, SWIFT CARRIER-BASED PLANE. NOTE ELONGATED GREENHOUSE, LONG NOSE WITH 2,000-HP. ENGINE

NEW VIEWS OF JAP AND GERMAN PLANES

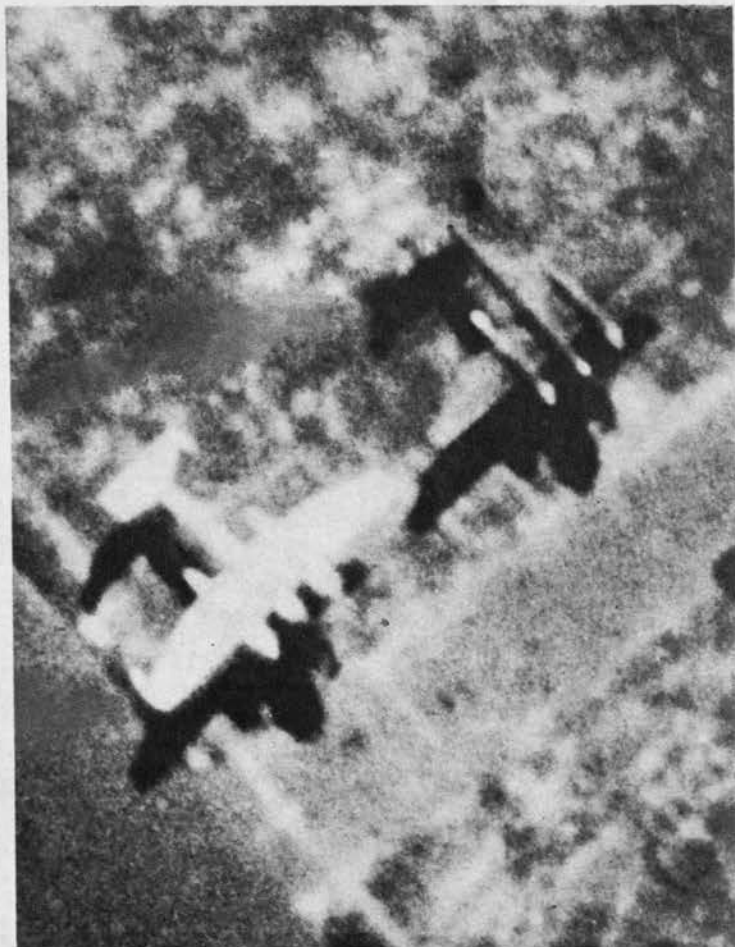
A very fast, maneuverable reconnaissance plane, Myrt 11 (*above*), is Japan's latest contribution to the Pacific air-sea war. Powered by an 18-cylinder engine developing 2,000 hp., Myrt is the best carrier-based recco airplane the Japanese have produced. The other new Japanese plane, Jack 11, is a fast, short-range interceptor carrying two 7.7-mm. and two 20-mm. guns. It is small and light by U. S. standards. Pictures at the bottom of the page show Tabby, the Japanese version of our best-known airframe, the DC-3; also one of the Luftwaffe's latest types, the He-219.



Jack 11 is a fat stubby 400-mph. fighter, somewhat resembling the earlier Tojo. Three-view silhouette of Jack will be found on page 17.

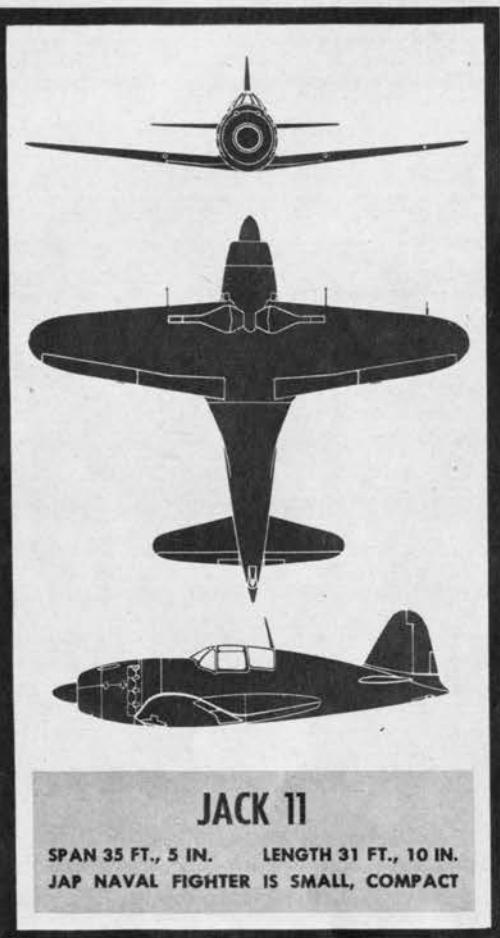
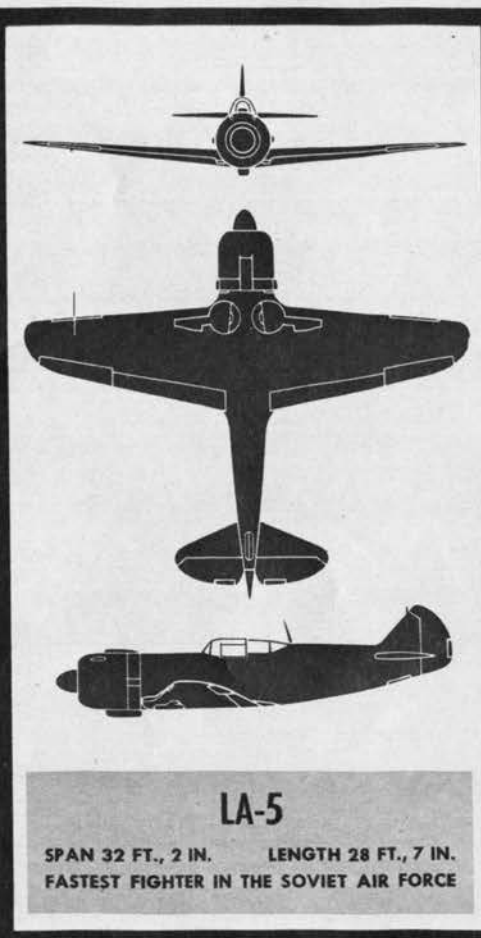
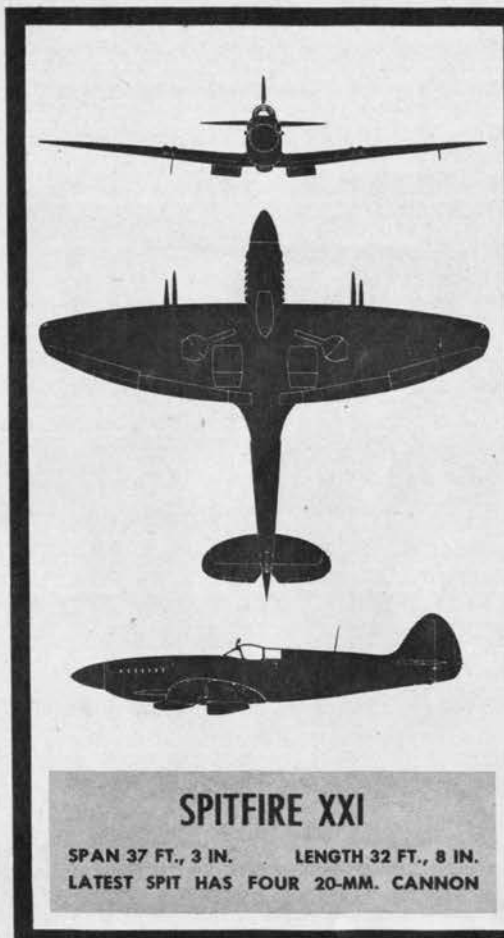


Tabby is new code name for Japanese DC-3, Tess being retained for the DC-2. Except for engines Tabby is identical with C-47 and C-53.



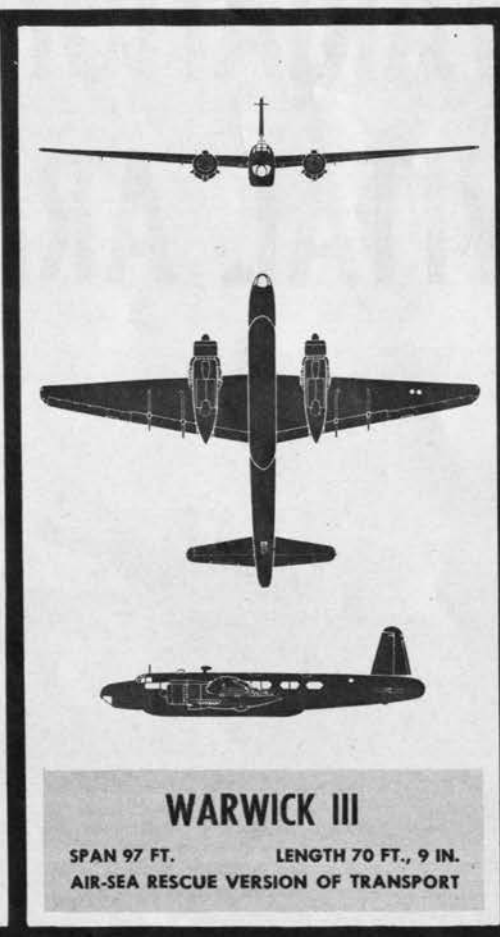
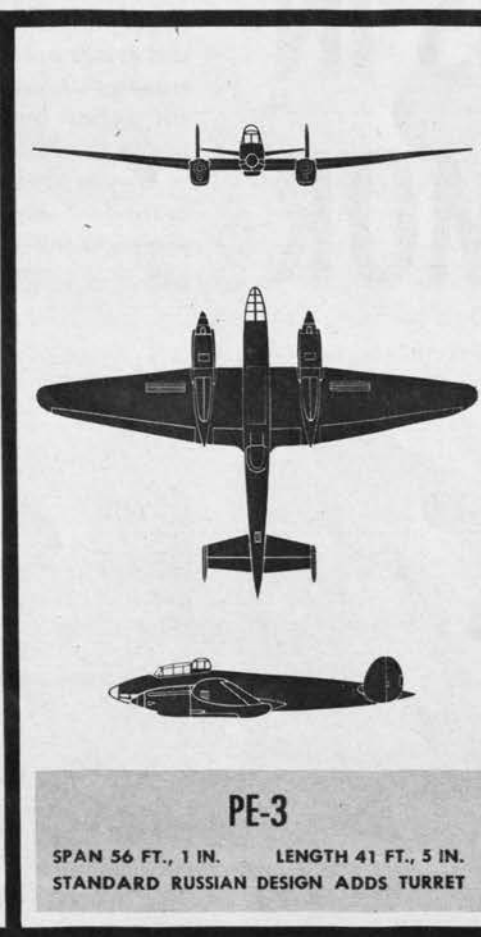
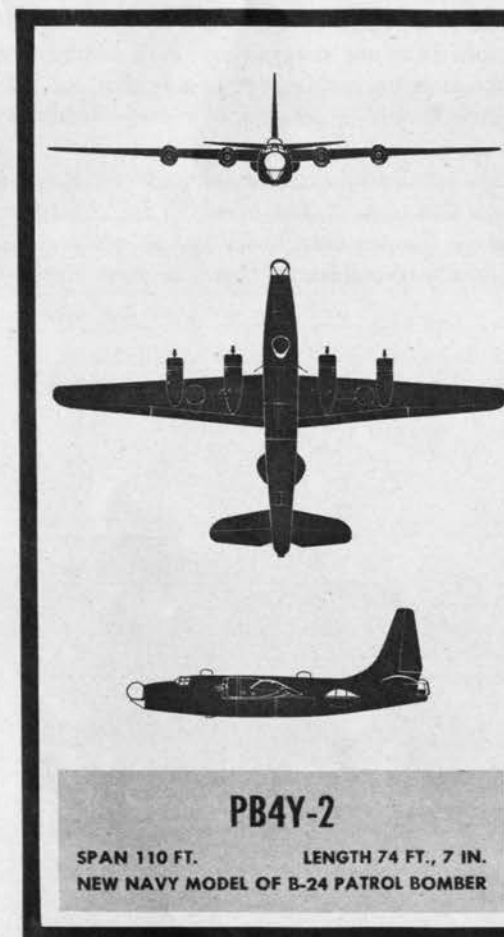
Two He-219's show long nacelles, short nose, slender fuselage and the wing's broken trailing edge in the first Allied recco photograph.

NEW AND REVISED AIRPLANE SILHOUETTES



Seemingly endless, RAF's Spitfire series continues with the XXI. Powered by the Griffon 65 engine, this newest version is marked by a large spinner, and broad, rounding fin and rudder. The cockpit

cover is in the style of the earlier Spitfires rather than the bubble type appearing on the XIV. The 385-m.p.h. La-5 and the Yak 9 (see pp. 49-50) are the most outstanding of known Soviet fighters.



Striking changes in Consolidated's B-24 design are introduced by the Navy PB4Y-2 (see pp. 6-7). Fighter-bomber model of U. S. S. R.'s Pe-2 attack bomber, the Pe-3 may now be seen with radial engines.

Breaking the Warwick's smooth lines, the new belly projection on the III holds a motorboat for air-sea rescue. Rugged geodetic construction permitted cutting the necessary large hole in the fuselage.



LONGEST-BARRELED GUN APPEARING ON THE U. S. M-4 TANK IS THE HIGH-VELOCITY 17-POUNDER RECENTLY INTRODUCED BY BRITISH IN NORMANDY

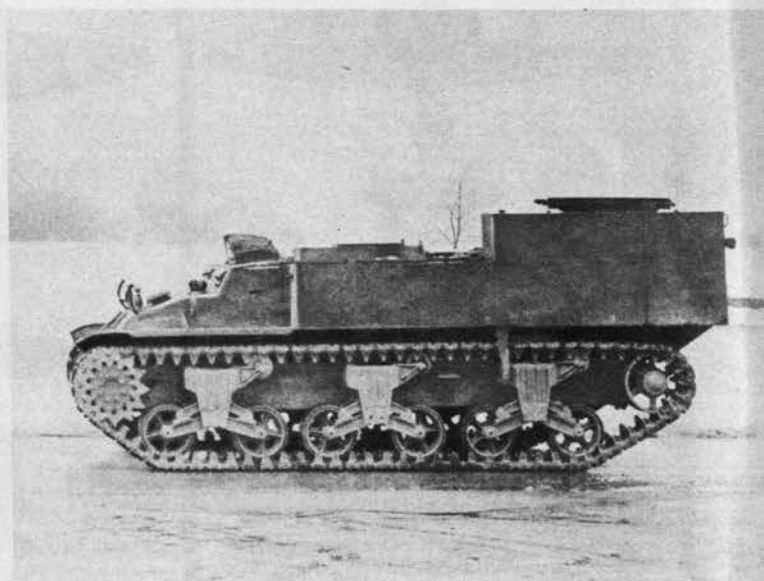
VARIATIONS IN VITAL ARMOR

In the recognition of armored vehicles it is not enough to be able to distinguish nationalities. The observer must know thoroughly all the vehicles in the field by their mission, firepower and armor protection. It is not always easy. Poor visibility aggravates the problem of distinguishing between vehicles of different tactical use which look alike because of stowage or similarities in design.

Proving that looks are deceiving, here are six vehicles related to the U. S. medium M-4 tank, no two of which are alike in employment and capacity. Suspensions, hulls, and occasionally turrets, bear a strong family resemblance. This is because all the ve-



Largest U. S. self-propelled gun in operation is the M-12, a 155-mm. weapon on the familiar hull base of the American medium tank. The M-12 has neither turret nor gun shield above its low, straight-sided hull.



Piled high with heavy ammunition, this U. S. cargo-carrier might easily be mistaken for a tank or self-propelled gun, especially since it travels with mobile artillery and is frequently towed by an M-12.



105-MM. HOWITZER ON M-4 HAS A SHORT BARREL, REINFORCED TURRET



M-10 ANTITANK GUN HAS MEDIUM TANK CHASSIS, OPEN-TOPPED TURRET

hicles went through the same assembly processes until they reached the final stages of differentiation. Then, according to the careers cut out for them, they underwent final modifications, particularly in armor and armament, to emerge as cargo-carriers, tank-recovery vehicles, self-propelled guns or medium tanks of varying armament.

The U. S. medium tank may be fitted with any one of four different weapons. A British 17-pounder appeared on the Sherman in the break-through east of Caen (*top left*). A 105-mm. howitzer (*above*) blasted the way to Paris with the American Third Army. Another weapon found on the Sherman is a high-velocity 76-mm. gun set in an enlarged turret with bulging rear counterbalance.

Still a standard U. S. weapon, however, is the familiar 75-mm. gun.

The Germans have mounted a wide variety of SP guns on several basic tank chassis. These guns range in size from 75-mm. to 150-mm. A Grizzly Bear, illustrated in the September *Journal*, is a 150-mm. gun on the PzKw IV tank chassis. Anyone mistaking it for a PzKw IV tank will never know what hit him.

Strafing pilots attacking an armored column must look out for SP AA. Some appears on tank and armored car mounts; most of it on half-tracks. The versatile half-track is a vehicle to be wary of. One day it may be a prime mover or personnel-carrier; the next day, a self-propelled mount for mortars, howitzers or AAA.



American tank-recovery vehicle has the hull and chassis of the medium tank and an armored crew compartment that resembles a tank turret. Loading crane with grapple hook is attached to rear.



Grim-looking vehicle is U. S. M-7, the Priest, an SP 105-mm. howitzer on a medium tank chassis. The hull is built high in front with sloping bow and distinctive pulpit-like AA ring mount. The M-7 has no turret.



The M-8 self-propelled howitzer is one of the fastest full-track gun carriages in use, thanks to its M-5 light tank chassis. The similarity in appearance to the M-5 is very strong, breaking down only in the short,

stubby gun barrel, in the shape of the open-topped turret and in the rear position of anti-aircraft machine gun. The specialty of the M-8 is to flush the enemy's gun positions in close support of armored units.



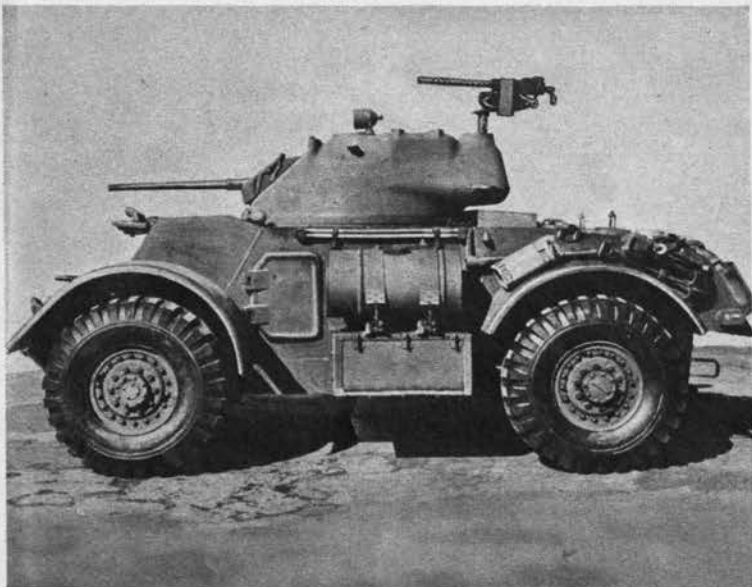
Twin U. S. armored cars tour French town on reconnaissance. They are exactly alike except for armament. The M-8 (left, head-on) has a 37-mm. gun in a round, open-topped turret like that of a light tank.

The M-20 (right, rear view), a fast armored command car, has a .50-cal. machine gun in a ring mount. Hull lines are low and sloping. Wheel arrangement is distinctive—one pair in front and two in rear.



The **M-5A1** is the standard American light tank. The tank's suspension, like that of the M-8 gun motor carriage shown at the left, consists of two pairs of tandem bogie wheels, a large trailing idler set flat on

the ground, and a front driving sprocket. Chief distinction between the M-8 and the M-5A1 is in armament. The tank mounts a slender-barreled 37-mm. gun in prism-shaped turret that fans out at the sides.



T-17E1, the Staghound, a new British armored car, has a full turret with a 37-mm. gun. The turret face of the Staghound slants sharply while the bulging rear is undercut and mounts an AA machine gun.



T-17E2 is the anti-aircraft version of the T-17E1 at the left. A special circular, open-topped turret carries twin AA guns. U. S.-built, the T-17E1 and T-17E2 have wide round fenders, jettison tanks at sides.



American half-tracks serve in many capacities. Here British troops use them to mount 75-mm. guns from which they fired a record barrage of 1,300 rounds in half an hour on the Garigliano front in Italy.

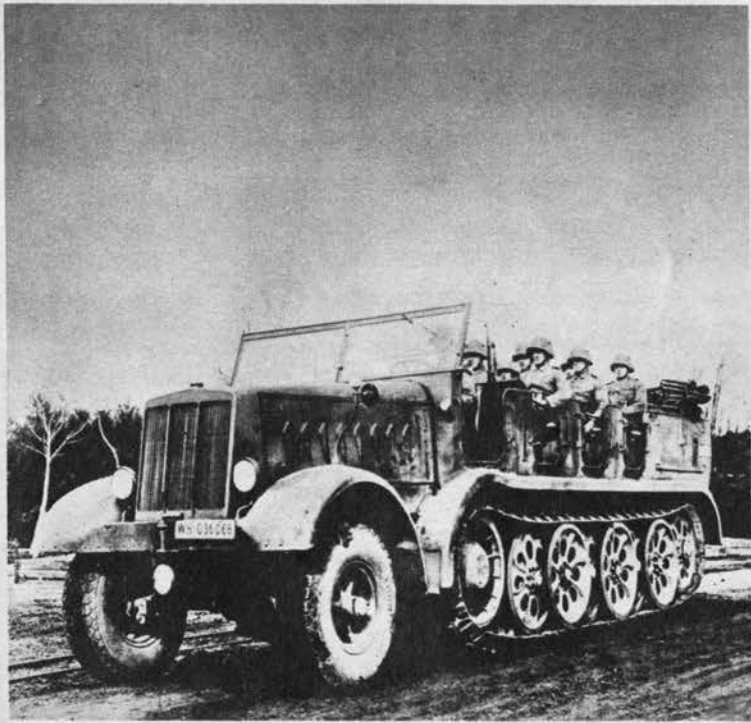


As a personnel carrier, this standard American M-3 half-track carries members of a rifle squad along an Italian road. The armored half-track may also be a prime mover of weapons up to 105-mm. in size.

Mounting an old "75," the half-track became our first tank destroyer and fought in North Africa and South Pacific. It is a fast and dependable mount on most terrain. Its forward section, like that of an

Army truck, has two large, powered wheels. The rear section, with high, straight armored sides, rests upon a tracked suspension of four small bogies in contact with the ground, a large front sprocket and rear idler.





German half-track personnel-carrier stands high above the ground, looking very much like an excursion bus. Unlike the U. S. half-track, its front wheels are unpowered and its track section is much longer.



Several types of Nazi AA artillery have been mounted on half-tracks. This long-barreled 37-mm. AA gun is also very effective against tanks. Large overlapping bogie wheels are characteristic of Nazi half-tracks.

U. S. half-track also acts as SP mount for AA artillery. The M-16 illustrated here has four coaxial .50-cal. machine guns on a rotating mount. Top portions of the half-track's vertical sides fold down on

hinges. Other half-tracks mount twin .50-cal. MG's with an automatic 37-mm. gun behind a tall "bucket" shield (the M-15), or twin power-driven .50-cal. AA weapons in a ball-turret arrangement (the M-13).



QUIZ NO. 2: ARMOR IN NORTHERN FRANCE



For answers, see p. 48



P-51D Most significant airplane modification of the war has been the installation of the Merlin engine in the P-51. Formerly a fine low-altitude plane, the Mustang now can

fight at any height. Merlin-powered model has airscoop below nose, deeper belly air intake. Latest changes (P-51D) include bubble canopy, fin extension, broad fillet at wing's leading edge and extra guns.

Major Modifications

Changed details of familiar planes affect recognition as well as performance

Pouring in from combat areas the world over is a steady stream of performance reports and requests for improvements. Factories and modification centers work constantly to meet these requests. In addition, new inventions, new adaptations of existing equipment thought up behind the front are available.

The result has been that practically no important operational type has gone very long without modification. Some modifications—flak screens, new engine parts—are not noticeable from the outside. But others such as added turrets, new cockpit covers and reshaped wings are definitely apparent and should be known.

Though modifications are made on a plane-by-plane basis, there have been certain trends. The blister canopies, once a Japanese national characteristic, are appearing on USAAF and RAF fighters in cleaned-up form. As for bombers, the U.S. is still emphasizing firepower for maximum safety on flights to and from the target, for handing out additional punishment when the target is reached. The nose and chin turrets on the B-24 and

B-17 were put in for the first purpose, the package guns on our medium bombers for the second.

As for the Axis, the Germans are producing surprisingly little this year in the way of external changes. Japanese engine improvements have produced noticeable nose changes, while minor wing changes have also appeared. The Japanese "horsepower dollar" is still being invested in range, maneuverability and rate of climb. As important as actual changes is the new coding system adopted for Japanese Navy planes. Under this system a plane when it first appears has the designation 11. An engine change adds to the second digit, a structural change to the first. Army planes are designated by one Arabic digit without the word "Mark" being used. For further details see p. 48.

Recognition of the veteran planes presented on the following pages should depend on their whole appearance, not the new details. However, for accurate intelligence as well as combat purposes, specific changes will serve to identify particular models.

WARPLANE MODIFICATIONS

NEW MODELS OF AXIS & ALLIED TYPES: 1943-44

RESTRICTED

With this silhouette summary of 20 outstanding improvements on standard warplanes— sequel to last month's grid—the *Journal* rounds out its survey of new aerial weapons that have appeared during the past 12 months.

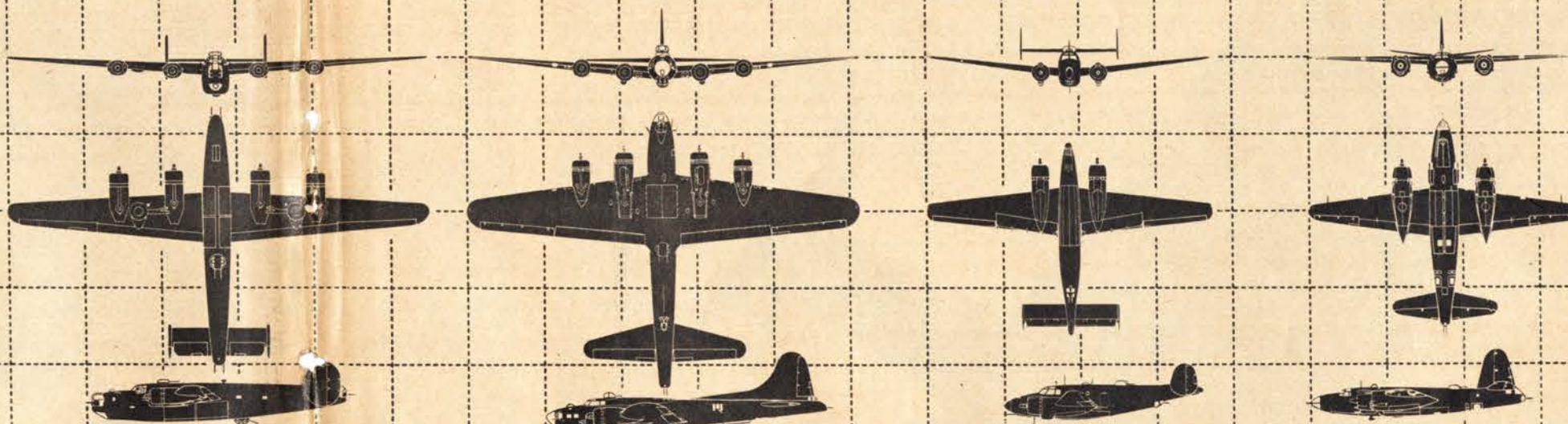
Most of the changes in U. S. medium and heavy bombers were made to increase firepower, while bubble cockpit canopies have improved visibility in the P-47D and P-51D fighters. Perhaps the most striking new version is the rejuvenated Mustang, now America's leading long-range and high-altitude fighter. The adaptability of a large number of U. S. airplanes is a trib-

ute to the excellence of their basic designs.

Germany's versatile types, however, are gradually becoming out-of-date. The Luftwaffe has relaxed its old policy of improvisation and is developing brand new airplanes to keep up with the fast-moving air war. Japan likewise has produced more new airplanes than improvements on older types. The Japanese have increased the firepower of their medium bomber force with turrets, both hand-operated and power-driven. Lightness and maneuverability are still key objectives to Japanese designers, however, and they have shied away from modifications that increase weight.

Scale: Each square equals 20 ft.

U. S.



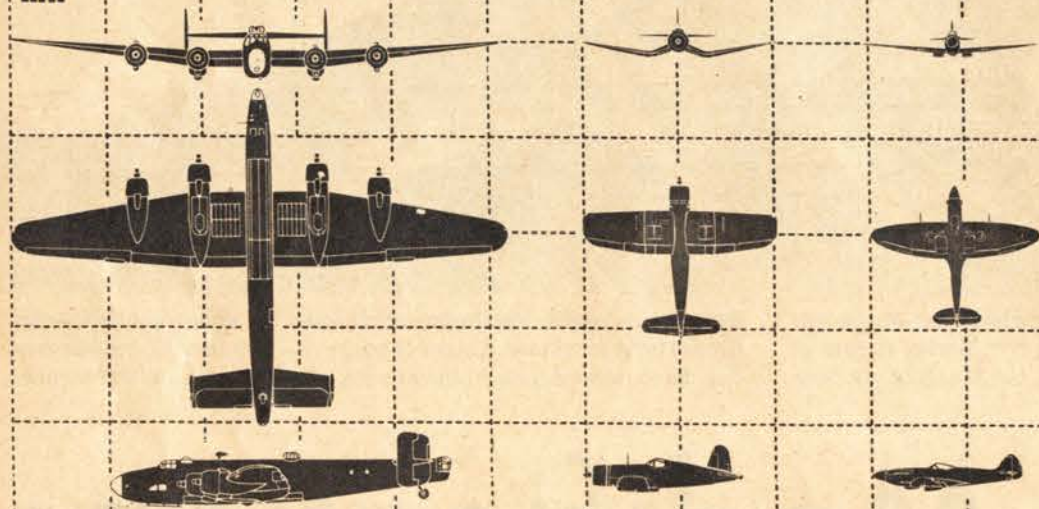
B-24H

B-17G

PV-2

B-26F

RAF

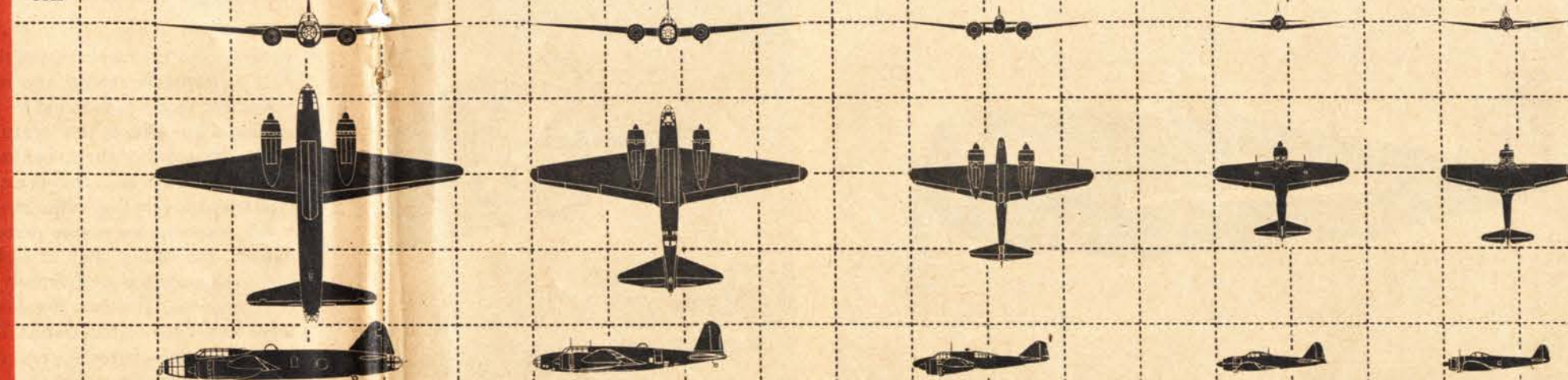


HALIFAX III

F4U-2

SPITFIRE XIV

JAP



BETTY 22

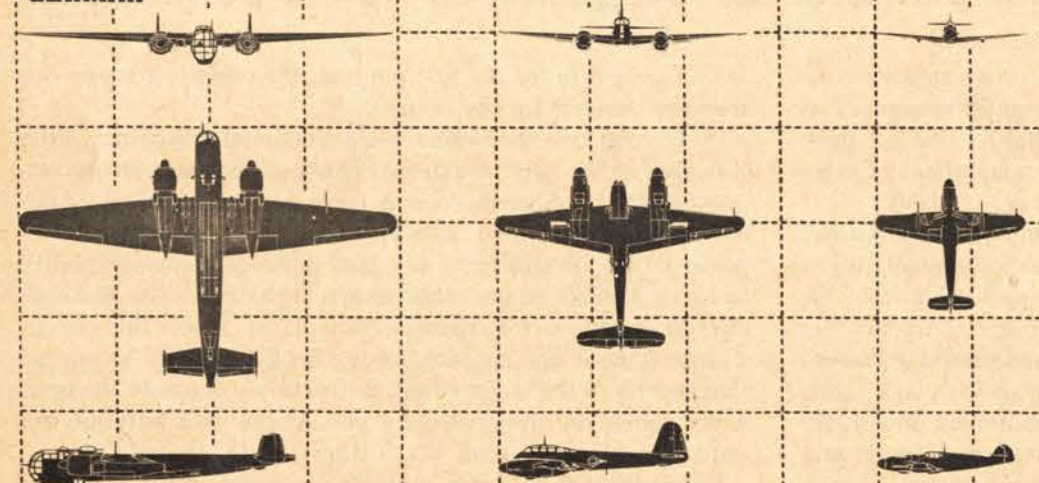
SALLY 3

DINAH 3

ZEKE 52

OSCAR 2

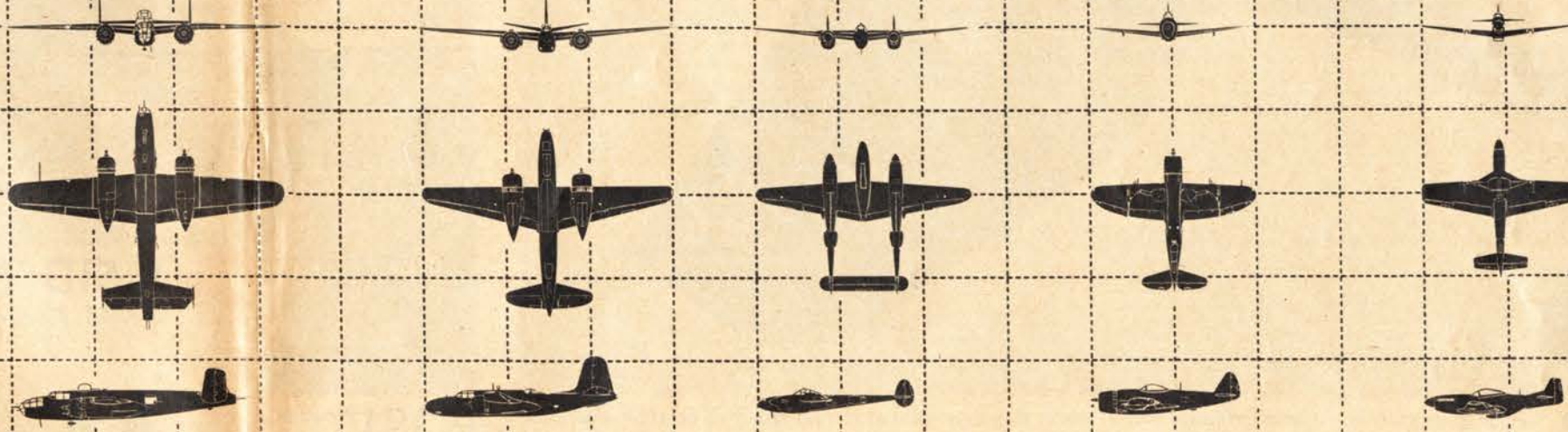
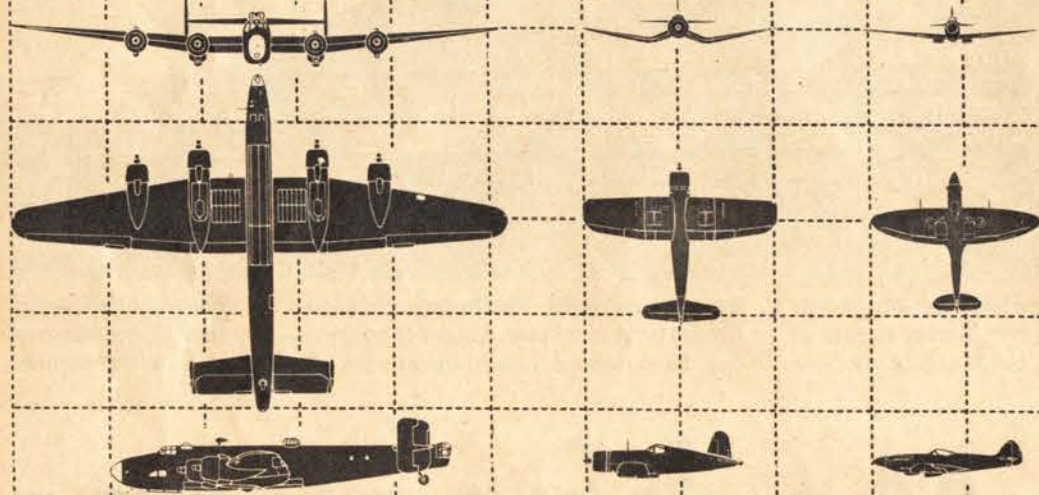
GERMAN



DO-217K

ME-410

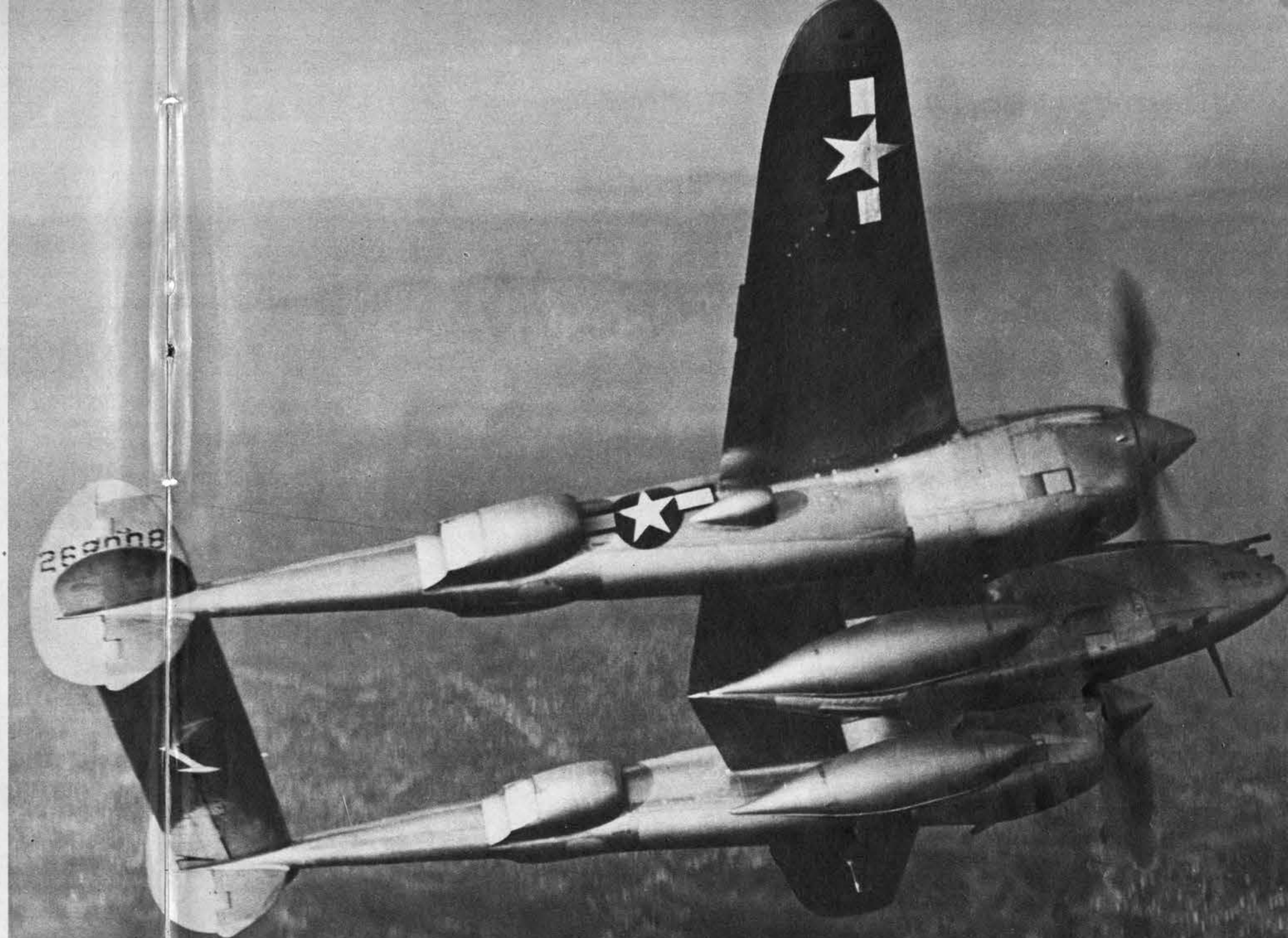
ME-109G





F4U-2 Cropping its graceful rounded wingtips has produced the major recognitional change in the Corsair now being used by the Royal Navy. Easier to

stow, this new version should also give better low-altitude performance. It was used to cover Barracuda bombers and shoot up shore anti-aircraft batteries in the Tirpitz attack.



P-38J New engines give the P-38 added

power. Allison, developing 1,350 hp., have an intercooler system requiring deeper air intakes under nacelles. These deeper nacelles have changed the Lightning's appearance

head-on, only angle from which confusion with an enemy—Me-110—has proved serious. In this connection it will be helpful to note that the Me-110 carries its fuel tanks well outboard of the engines as contrasted with inboard tanks on the P-38J.



P-47D The Thunderbolt's chief external variation is the bubble canopy which appears to be replacing the faired type on most USAAF and RAF single-engine fighters. Wing rack for fuel tanks or bombs adds to P-47's versatility as escort plane, strafe and divebomber.



PV-2 Many details of Ventura were altered in conversion to PV-2 Harpoon. Fins, rudders were set outboard of tail-

plane. Fins were enlarged and rounded. Bomb bay was deepened. Span was increased 9½ ft., tips were rounded, but are blunter than PV-1.

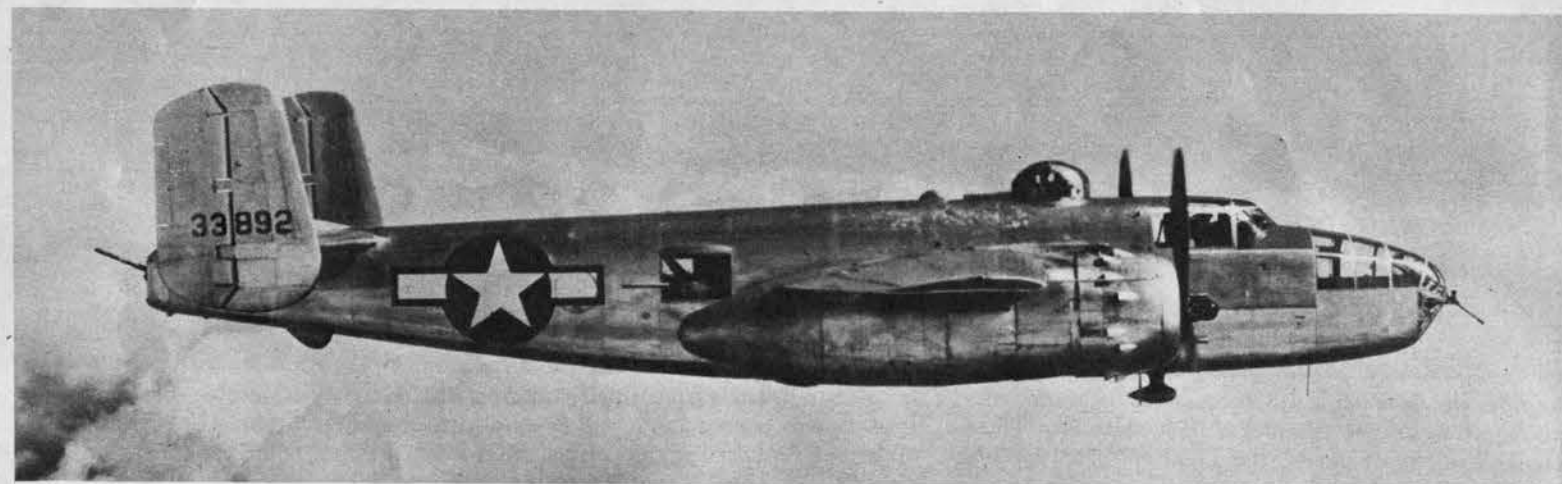


A-20G Flat Martin turret just behind the cabin is the recognitional change on the new Havocs. Engine changes have taken series to K, G and H have the solid nose, while the J and K have Plexiglass bomber noses and may carry three package guns on each side.



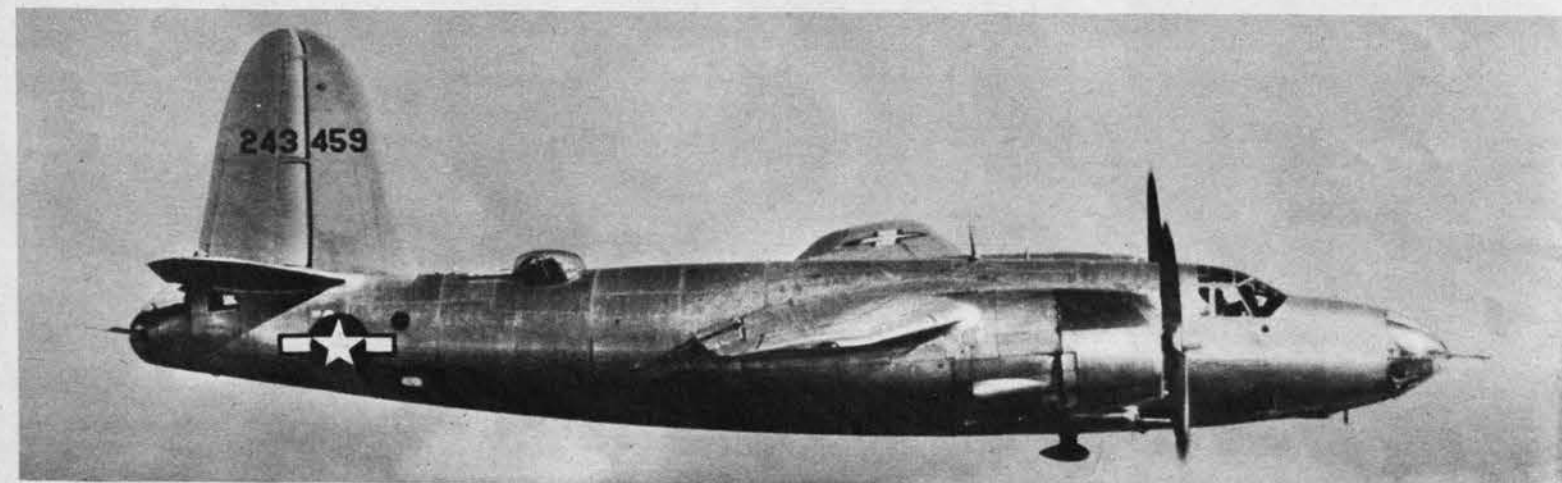
B-17G Heading for Bremen these high-flying Fortresses show the chin turret which distinguishes the B-17G from earlier Fortress models. The tall fin and rudder with the graceful forward

sweep of the former remains chief recognition feature in side views. The most important step in B-17 development was the change from D to E when the tail was rebuilt to allow for a turret. Back and belly



B-25J Firepower was the governing factor in B-25 modifications involving the tail and waist gun positions, side gun packages and increased nose armament. The tail guns are now in a blis-

ter-type turret, while the waist guns are in casemats. The gun protruding from the package can be seen just inside the nacelle. The Bendix turret has been moved forward to a position just above the cabin.



B-26F The Marauder's sleek outline is unaltered in this side view, although gun packages show up as bumps when seen head-on. Rounded tail is now standard. The addition of six feet

to the wingspan in an early modification decreased the wing loading and helped overcome some of the B-26's trickiness. Setting the wing at a new angle further increased reliability in take-offs and landings.



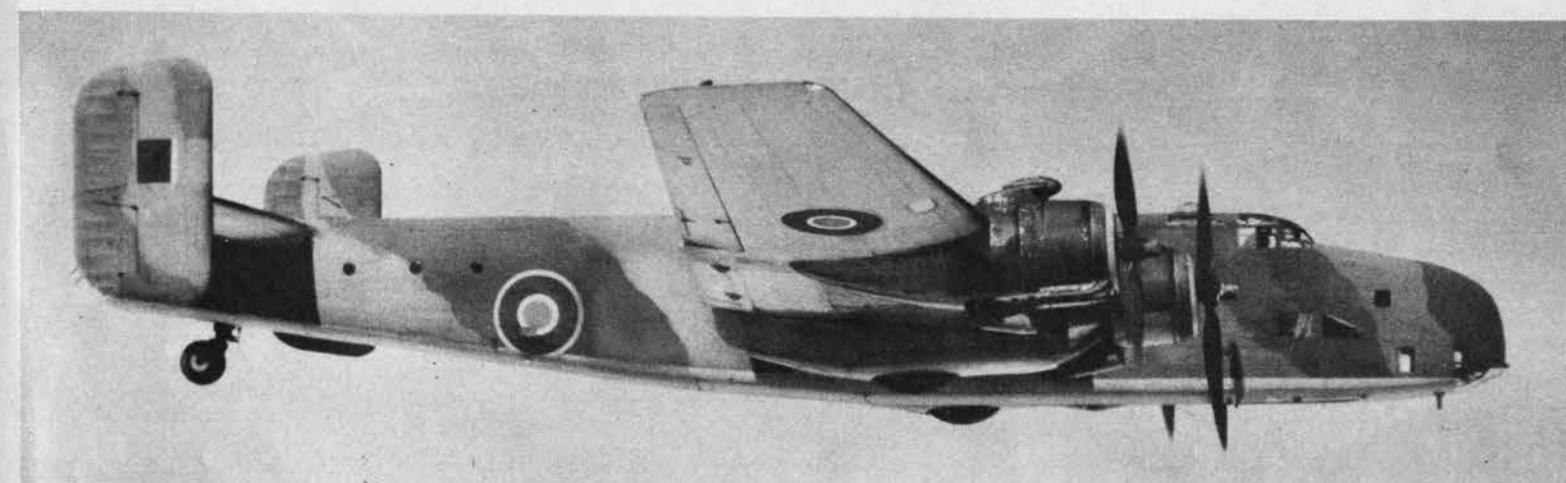
turrets were also added. As with most improvements, the chin turret was made necessary by a devastating phase of the enemy's attack. In the case of Flying Fortresses in the European theater it was the head-

on attack used by daring Luftwaffe pilots. First installed at a USAAF modification center, the chin turret proved successful and desirable for all theaters, then became a standard factory production feature.



B-24H Paralleling the improvements on the B-17, those on the B-24 have been made to give the big bomber the added firepower which has enabled it to join the Flying Fortress in

the rugged runs over Europe. The new nose turret has added bulge over the bombardier's position. Breaking the smooth lines of the Liberator's fat rounded fuselage is a fully retractable Sperry belly turret.



HALIFAX III Rounding the nose, squaring the fins and substituting Hercules radials for inline Merlins have improved the Halifax so that it matches the Lancaster in

speed and bomb load. Shown above is a transition model of the III. The final version (*see grid*) has rounded wingtips which add five feet four inches to the span. New wing is almost identical with Lancaster's.



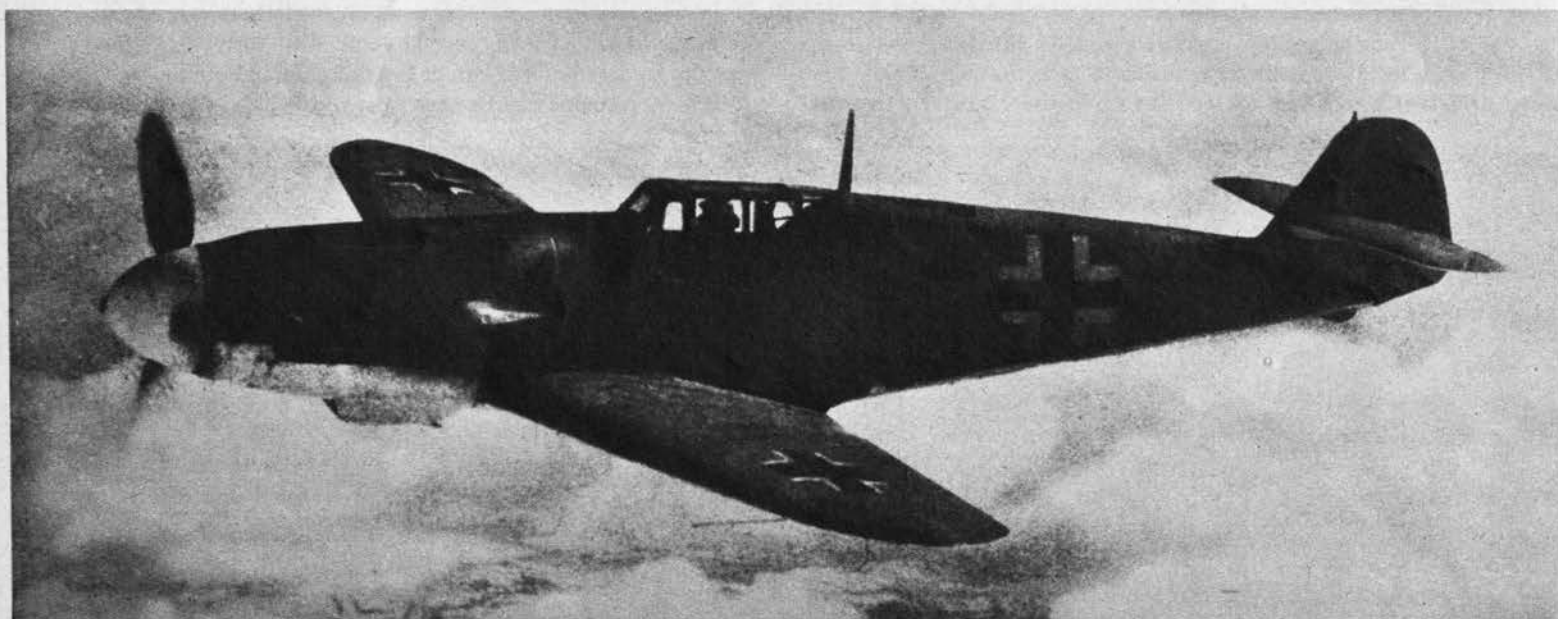
ME-410 This plane, shown above and below on a Sicilian airfield, is really a modified Me-210. The substitution of DB-603 engines for the less powerful DB-601's and 605's has

added 7 inches to the overall length. The short, heavy nose is an outstanding recognition feature. Low wing on twin-engine Messerschmitts helps avoid confusion with Allies' Mosquito and P-38 seen head-on.



ME-410 Contrast between the bulging nose and the slender rear section of the fuselage is evident in this view. Note single fin and rudder. The Me-410 is extremely fast and heavily

armed, has appeared recently with a 50-mm. cannon. The remotely controlled gun blisters, located on each side of fuselage just above and behind wing's trailing edge, should help identify Me-410 from above.



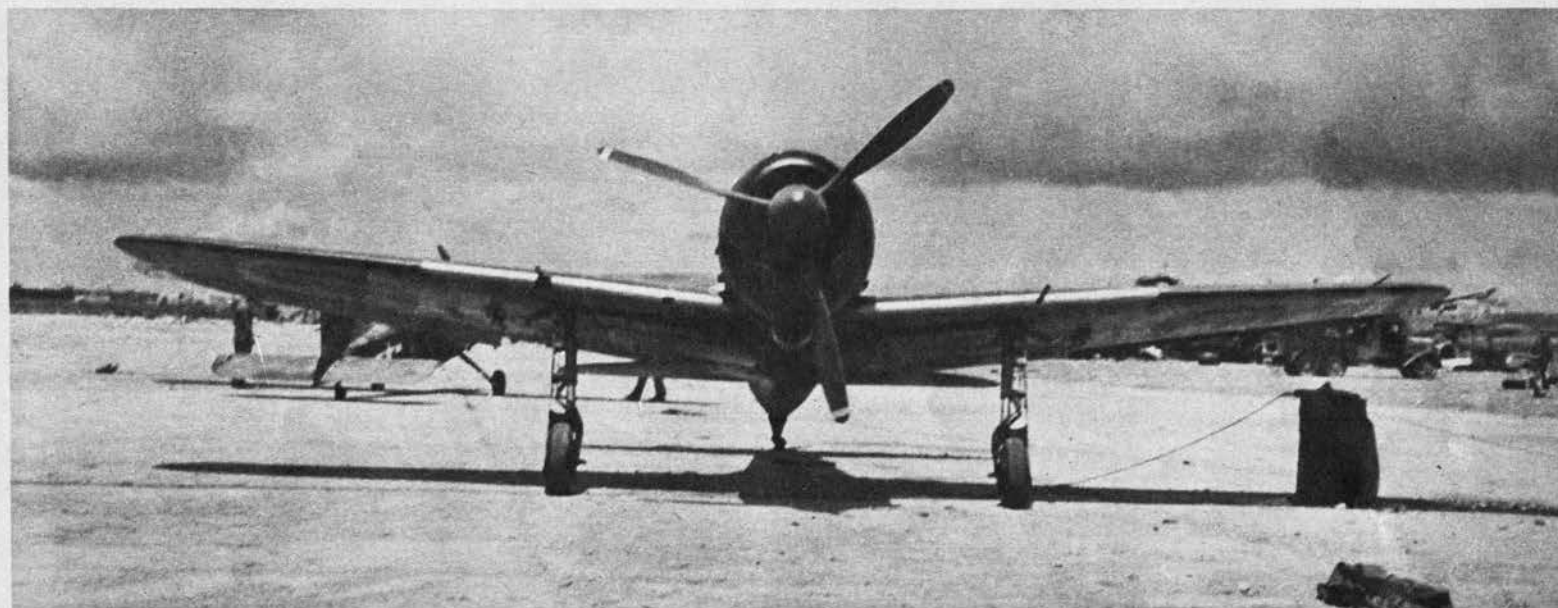
ME-109G Straight and slim, the Me-109G has same air-frame as the F. The distinguishing modification was the switch from the DB-601 engine to the bigger and more power-

ful DB-605. Added power has resulted in heavier armament: 20-mm. wing guns and 13-mm. guns replacing the 7.9's over the engine. Small fin, rudder and tailplane and faired cockpit are important for recognition.



ZEKE 52 A fine haul of the latest Zekes (*above and below*) was made on Saipan. They differ from the original Zeke in having smoother cowlings, shorter wings and smaller ailer-

ons. Individual ejector-type exhaust stacks almost eliminate flame pattern. High-velocity 20-mm. cannon have replaced the earlier low-velocity weapons. The synchronized 7.7-mm. cowl guns are retained.



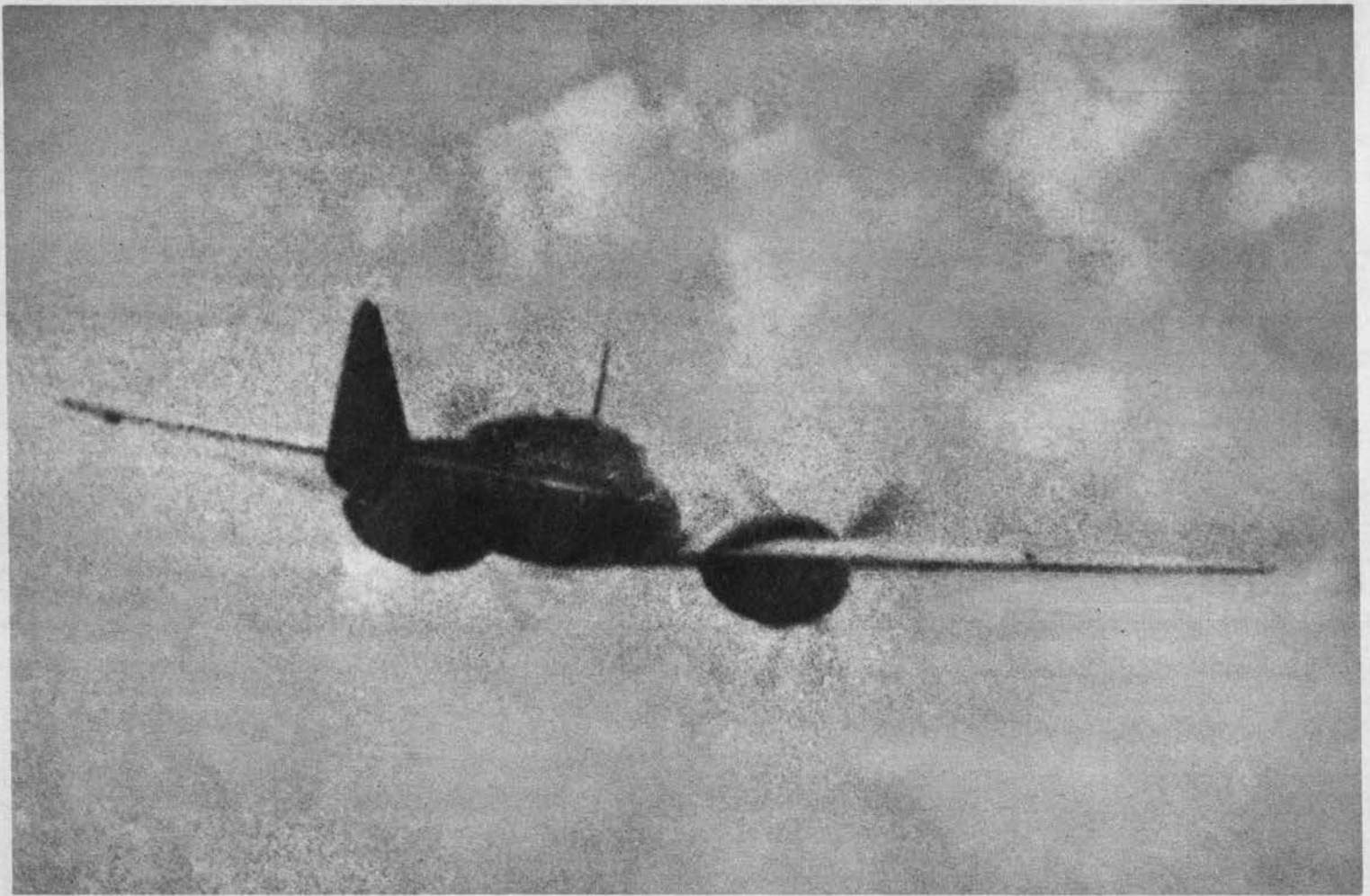
ZEKE 52 The new Zeke is really Hamp with rounded wingtips in place of Hamp's clipped ones. Under the new coding system (*see p. 48*) Hamp will be known as Zeke 32. Except

for the rounded wingtips there are no major external changes. The span remains the same at 36 ft. 5 in. The round nose and graceful dihedral of the wing remain important for spotting Zeke 52 head-on.



OSCAR 2 Most frequently seen Japanese Army fighter, Oscar has been given new heavier armament, a new engine and a modified wing since it was first introduced. Guns are

now 12.7-mm.; the engine develops 1,150 hp. and has a three-bladed propeller; the wingtips are no longer raked but very blunt. In flight Oscar gives the impression of having a long fuselage, very short nose.



DINAH 3 Enlarged nacelles protrude beyond the trailing edge of Dinah 3's wing. No other Japanese plane has this feature (although it does appear in more striking

form on the A-20, A-26, B-25). Moreover, Dinah is the only plane used by both the Japanese Army and Navy. Its top speed of 395 m.p.h. makes it one of the fastest twin-engine planes in the world.

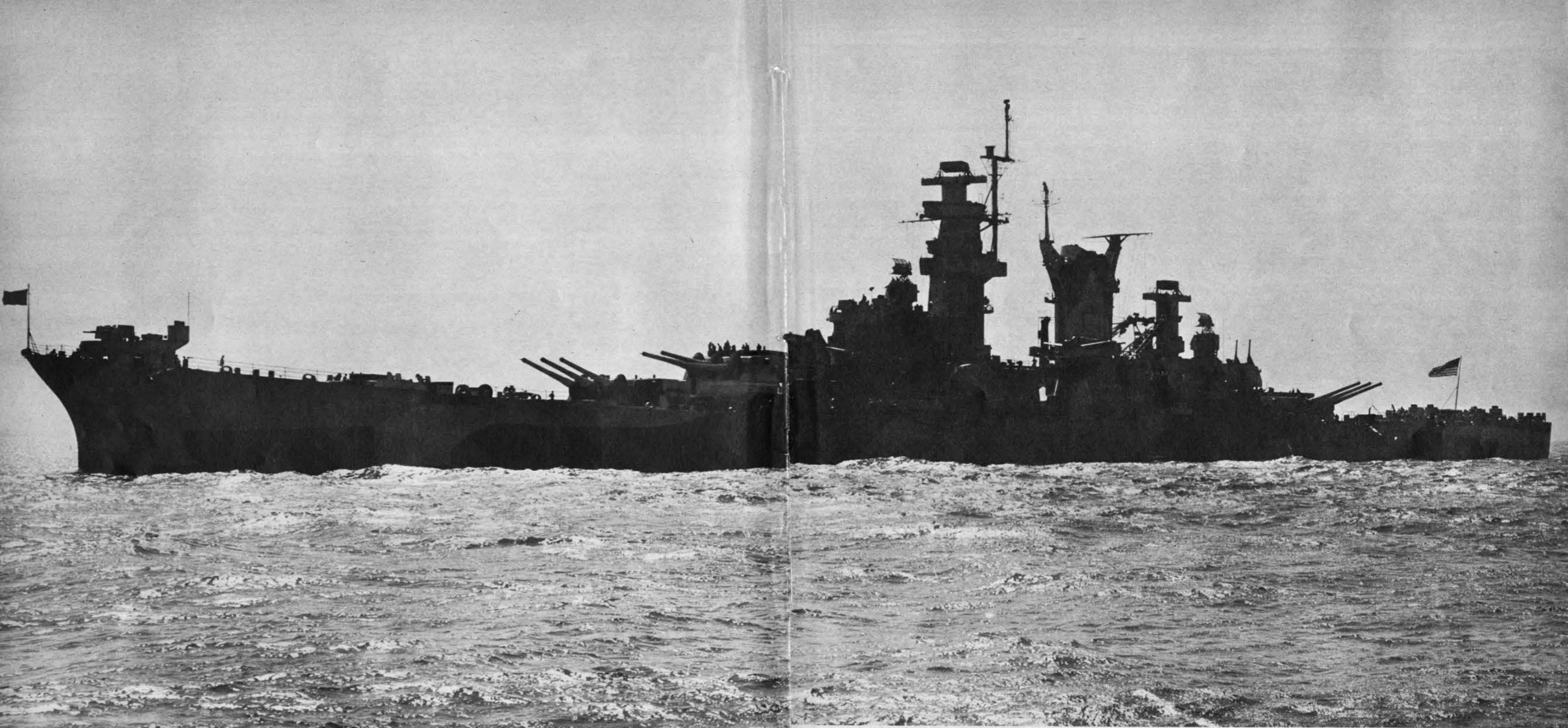


SALLY 3 Unusually clear picture of this Army bomber was taken from a B-25 just before the Jap went down in flames. Visible variations on Sally have centered about

the greenhouse. Rear section has been cut away and replaced by a hand-operated turret. The first Japanese power turret appeared on Betty 22 (*opposite*). Helen has replaced Sally as chief Army bomber.



A BETTY 22 SHOWS
NEW POWER TURRET
AND ROUND WINGTIPS



NEWEST U.S. NAVAL WEAPON IS 27,500-TON ALASKA. MOUNTING NINE 12-IN. GUNS, ALASKA IS RATED AS A CB, OR LARGE CRUISER. TOWER FOREMAST,

HORNED STACK AND OTHER SUPERSTRUCTURE ELEMENTS ARE WIDELY SEPARATED. ITS 808-FT. LENGTH INCLUDES LONG CLEAN BOW AND AFTERDECKS

HEAVY CRUISERS

Heavy cruisers in action compose much of the naval history, both routine and spectacular, of World War II. Lightly armored but with good striking power, the heavies have suffered many casualties yet inflicted decisive damage in a long series of hard-fought sea battles. Protecting vital convoys, supporting amphibious attacks and shelling enemy positions, CA's have given good account of themselves in all oceans. This grim combat record has not led to profound re-evaluation as in the case of battleship vs. carrier, but has increased the confusion in classifying cruisers.

Both CL's and CA's have been employed for the same tasks, often together. Increases in size and armament have robbed the old terms of much of their meaning. Britain has officially discarded

the old separation, lumping both CL's and CA's together under a general heading of "Cruisers." With other navies of the world, the London Treaty definition still stands. At London in 1930 the major powers agreed to rate as CA any cruiser which carried guns between 6.1 and 8 in. caliber. This has become a more and more arbitrary division, but it is supported by the fact that most CA's in operation were built according to Treaty specifications.

Only new heavy cruiser construction of the war has been America's large and powerful Baltimore Class, the first of which were laid down in 1941. Surrounded by mystery while on the ways, the Alaska (*above*) emerges neither CA nor battle-cruiser, but as a new and distinct naval type. The Alaska should not be grouped

FAST, POWERFUL MIDDLEWEIGHTS HAVE BORNE BRUNT OF SURFACE FIGHTING IN WORLD WAR II

with the German Scharnhorst or French Dunkerque, both specialized warships of battleship design. Basically a cruiser, the Alaska is tremendous in size, with a battery far heavier than any found on conventional CA's. This great, new fighting ship is therefore appropriately called a CB, or Large Cruiser.

Heavy cruiser development has not been rapid during this war. The Baltimores were the first CA's announced as over the 10,000-ton limit established by the Washington Treaty, now expired. From their very heavy armament however experts judge that certain Japanese ships were illegally built larger. Short of labor and materials, Japan and Germany probably have not been able to give priority to CA construction, but along with the U. S. the Axis nav-

ies believe in the large cruiser. Britain has always been skeptical of its value, and preferred big numbers of smaller, more lightly armed vessels. Without the battleship's heavy deck armor and honeycomb of compartments, the CA has proved vulnerable to the growing potency of aerial attack, and has added more AA protection.

Skill in handling rather than design differences has established the relative quality of cruisers on the basis of class or nationality. The Germans and triple-hulled Jap types have offered great resistance to torpedo attack. U. S. cruisers have matched this strength underwater, and also shown remarkable toughness under heavy shelling. Though there may be few outstanding performance differences, heavy cruisers have pronounced national characteristics.



Seen from above, the U.S.S. Baltimore bristles with anti-aircraft in twin mounts. Nine 8-in. guns in two triple turrets forward and one

aft is standard armament for all U.S. heavies except the old Pensacolas. Baltimores are long and large, with tapering bow and transom stern.



Lean rakish power of America's newest and finest heavy cruisers is revealed in this picture of a Baltimore Class heavy at anchor in the

Pacific. Superstructure rises in two clusters, but is compact in relation to the ship's great length. The tall, twin stacks are moderately spaced.



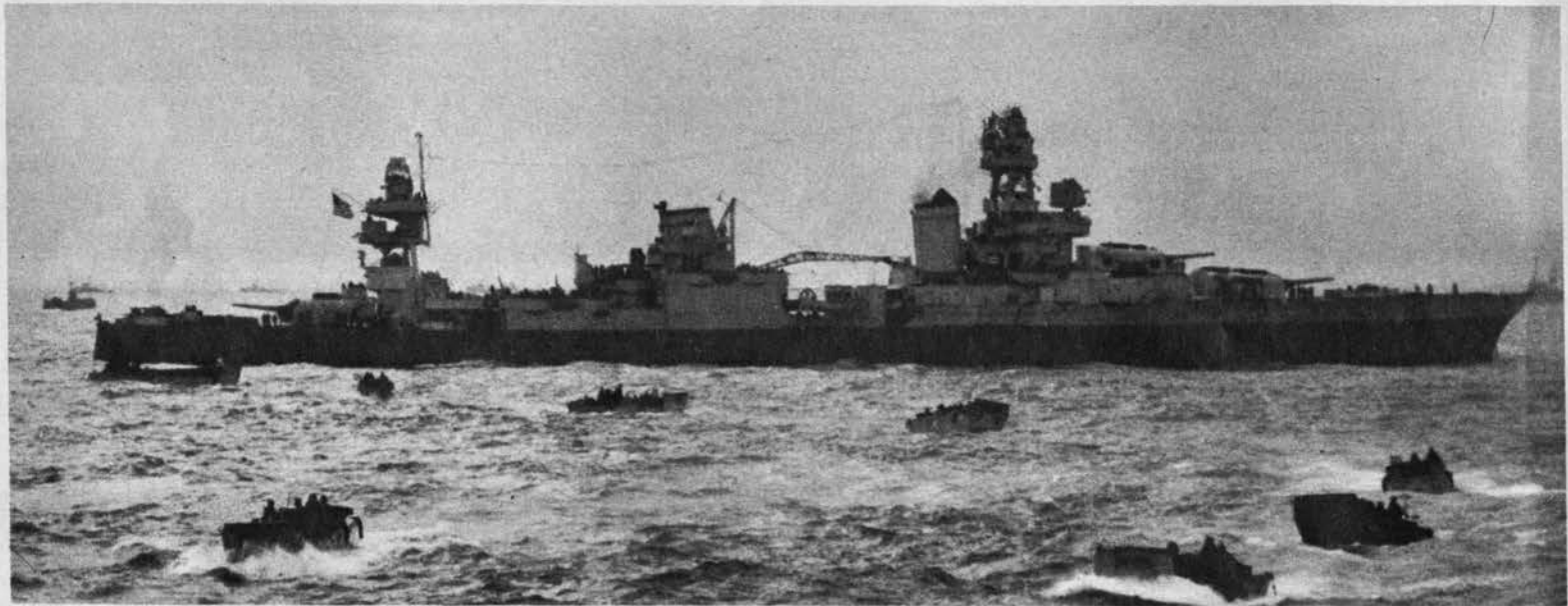
Cloud of gun smoke hovers above prominent after superstructure of New Orleans Class cruiser. Deckline breaks just aft of the second

stack, leaving little freeboard toward the stern. Stacks are set close to blocky bridge. Short pole masts rise from superstructure elements.



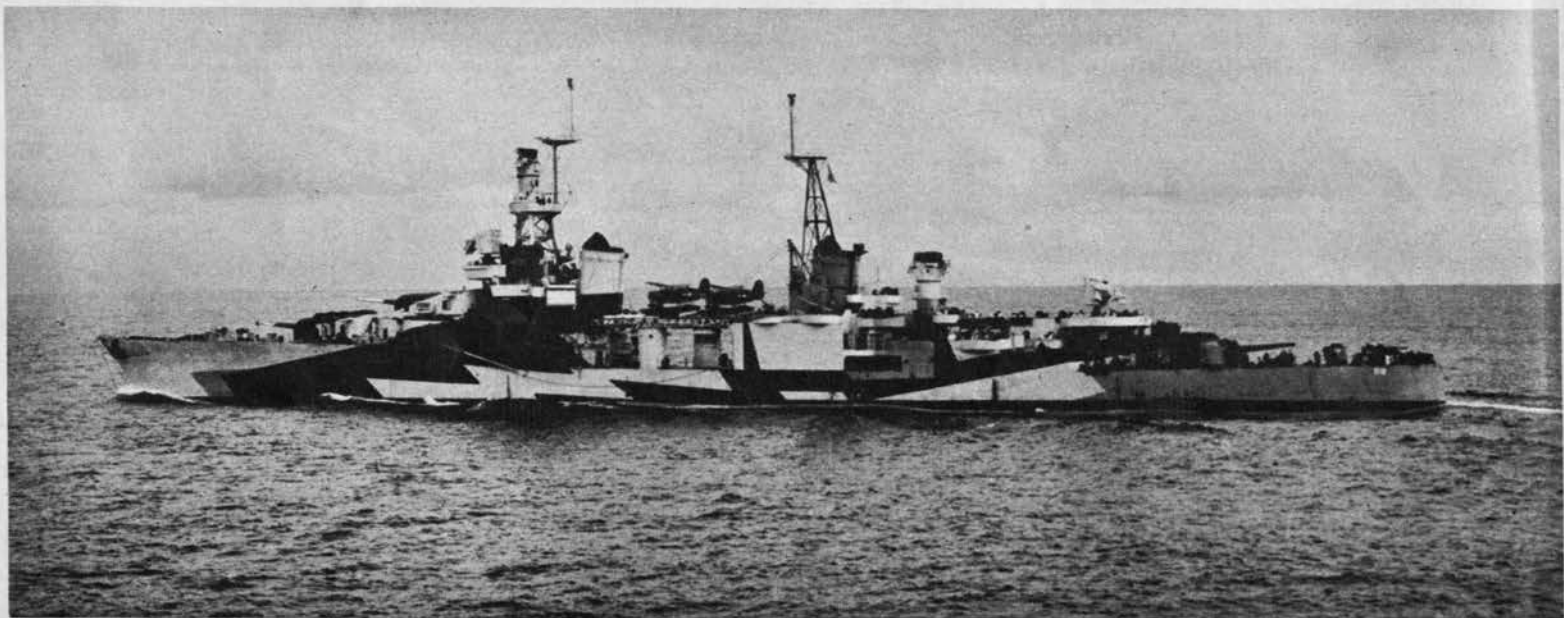
U.S.S. Wichita plunges through heavy seas. One of several Brooklyn Class CL's laid down as CA's, Wichita was the only one completed as a heavy. Last of our Treaty-built CA's, Wichita is heavily armored

for a 10,000-tonner. The closely spaced stacks are typical of recent U. S. cruisers. Wichita introduced dual-purpose secondary armament superimposed above main battery turrets, feature of Baltimore Class CA's.



After shelling Nazi defenses, U.S.S. Chester lies off the coast of Normandy on D-day while a swarm of LVT's shuttles back & forth to the newly won beachhead. Chester and Augusta units still have

the old rig of Northampton Class but eventually will be refitted like their sister ship Louisville (*below*). Like all older U. S. heavy cruisers, the Northampton's have a broken deckline and heavy tripod foremast.



Refitted U.S.S. Louisville shows how all Northampton units will look in the future. Stump tripod mainmast has been removed to give better clearance for AA fire. It is replaced by a light pylon structure set

about the after stack, a new low-set fire director and increased automatic AA armament. Changes were first tested in the Portland Class (*top, right*) which are very similar in over-all design to Northampton's.



On maneuvers, Portland Class cruiser steams slowly with U.S.S. North Carolina in background and F6F's circling overhead. Portlands are low in outline with a distinctive break in the deckline. Wide stack

separation is caused by alternating engine and fire rooms so a lucky hit cannot knock out ship's power altogether. Stacks are taller than on Northampton's; otherwise, the two refitted classes are almost identical.



U.S.S. Pensacola rebuilt has solid control tower instead of the old stump mainmast and lower AA and searchlight platforms replacing blocky tower aft of the second stack. Pensacolas have little freeboard.

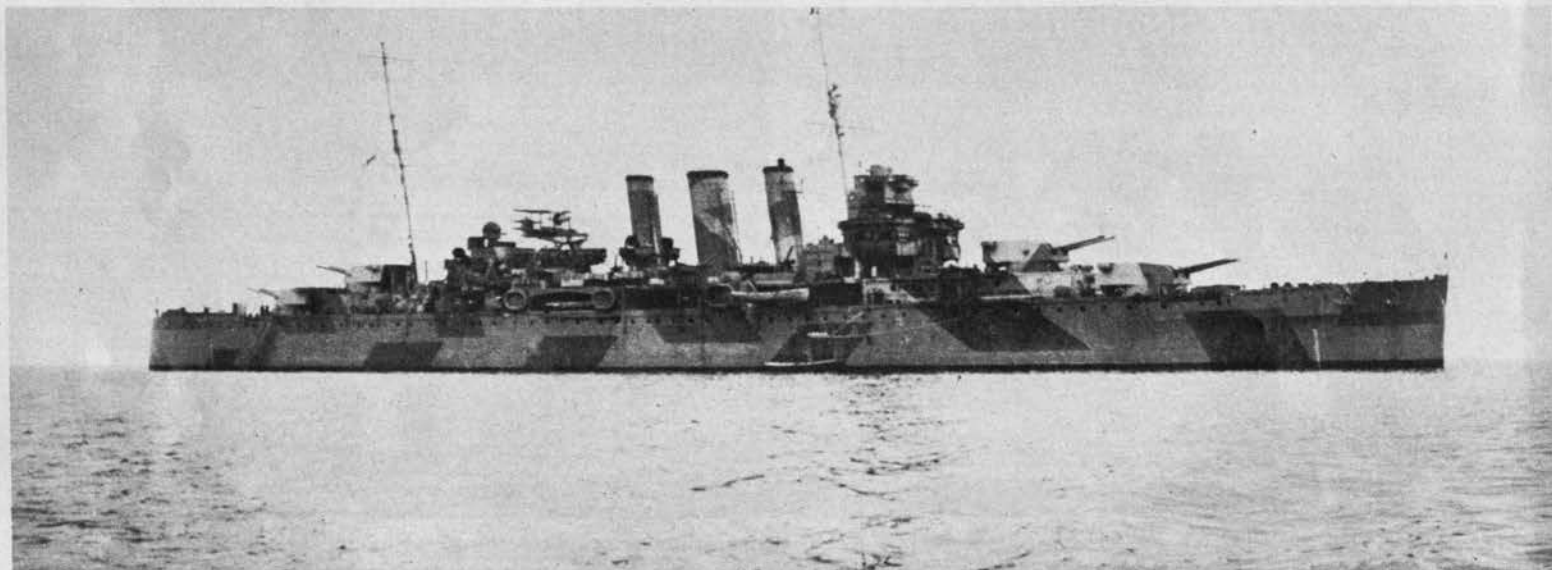


Oldest U. S. heavies, Pensacolas are the only ones which mount ten 8-in. guns. View from above shows this heavy armament arranged in four twin and triple turrets. Note tall stacks and lofty tripod foremast.



Pacific moonlight silhouettes H.M.S. Australia, Kent Class cruiser assigned to the Royal Australian Navy. Like most important British heavies, Kents have high freeboard, simple superstructure topped by

three tall, thin, raking stacks, closely spaced. Cumberland and Suffolk units of Kent Class have deck cut down abaft No. 4 turret, and boxy airplane hangar. Note the old Walrus pusher biplane resting on catapult.



Devonshire and Norfolk Classes are almost identical with Kents. Chief difference is No. 2 turret set farther forward of the bridge. Both classes carry eight 8-in. guns, mounted in four twin turrets. These

cruisers were all designed in the '20's, do not represent latest British thought in heavies. Fine sea-keeping abilities suit them to the missions far overseas on which they have been chiefly employed during this war.



Camouflaged H.M.S. Frobisher is one of two surviving Hawkins Class CA's. Old ships built by Britain at the end of the last war, they carry seven 7.5-in. guns in three single-shield mounts aft, two for-

ward and two amidships. The low outline of Hawkins Class cruisers is broken by short tripod foremast, and two raked stacks. Forward stack is broader, while the searchlight platforms are mounted on after stack.



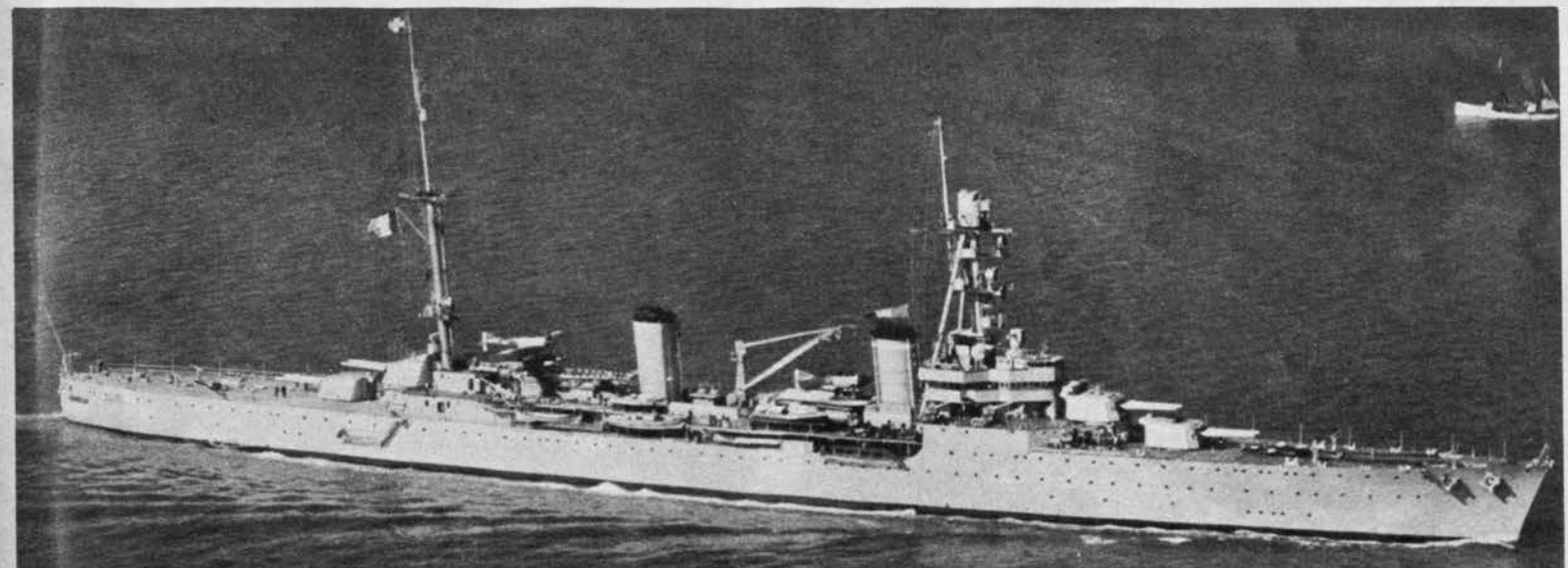
H.M.S. London, here shown on North Atlantic patrol, is a completely redesigned unit of Great Britain's Devonshire Class (*middle, left*). It has a blocky, typically British bridge, with two upright stacks of un-

equal height, and light tripod masts. Forward stack is enclosed by the bridge superstructure. Only British heavy of this design operational, London's over-all appearance suggests recent British light cruisers.



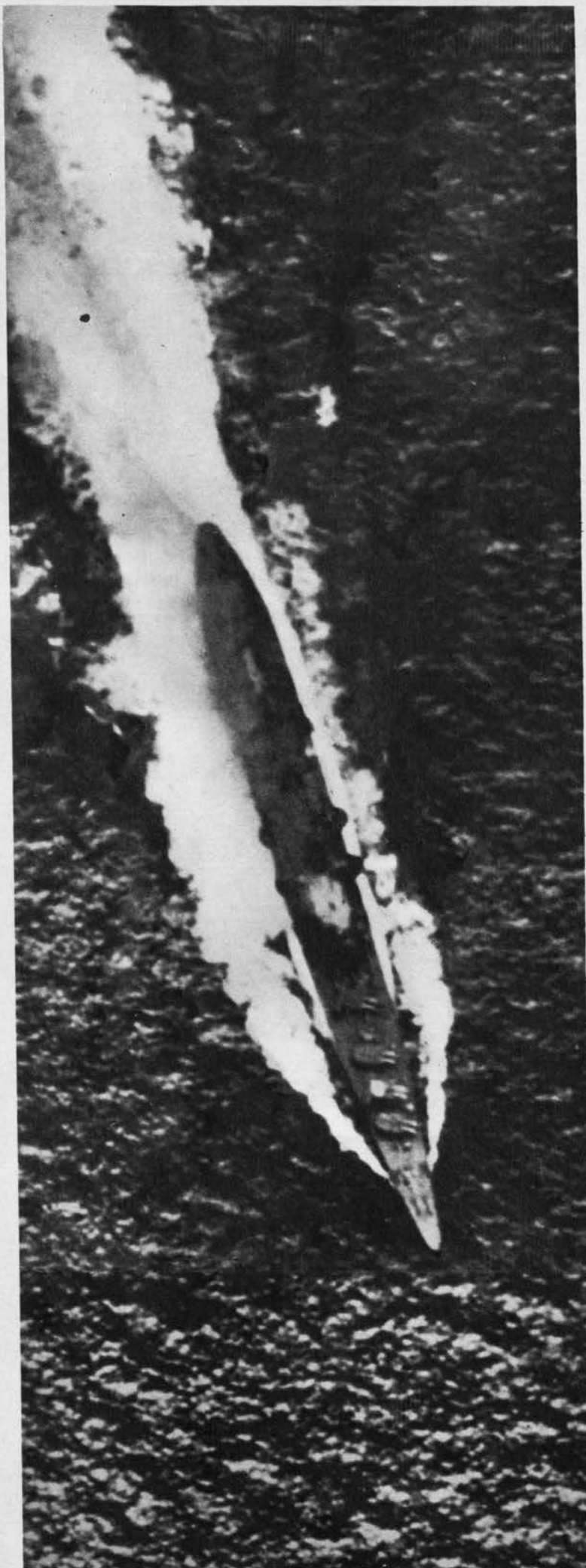
Free French CA Suffren is sole survivor of the Colbert Class. Her three sister ships were scuttled at Toulon Harbor in 1942. Essentially, the Suffren is a sister of the Tourville Class shown below, with

higher bridge. Similar to the British CA's in their design, French cruisers sacrificed armor protection for extraordinary speeds. The French Navy developed a very small, compact twin turret for 8-in. armament.



Duquesne of the Tourville Class has practically no protection, and a speed of about 34 knots. Tourville type was developed from the Duguay-Trouin CL's, and has a rather light appearance. Deckline is

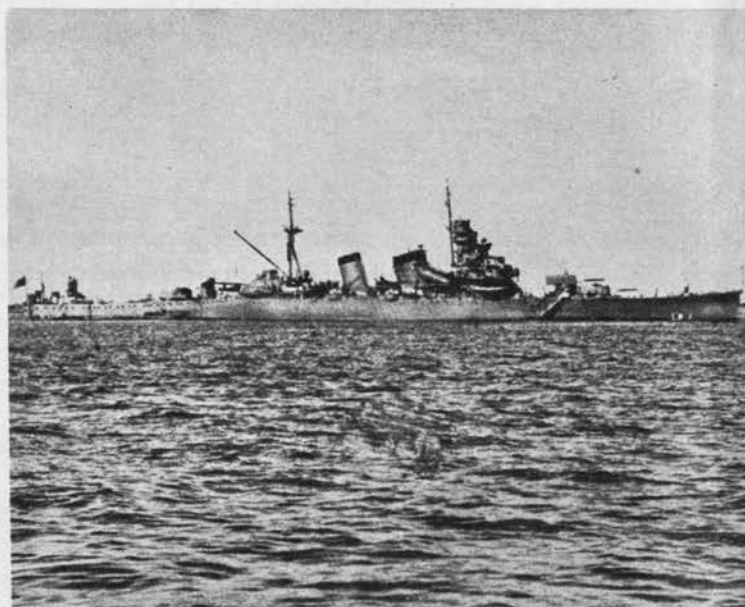
broken at bridge, and after superstructure is low. Free French cruisers have taken part in the invasion of Normandy and Southern France, shelling German shore positions and supporting landing operations.



Bombardier's-eye view of Japanese Tone Class cruiser fleeing the Battle of Santa Cruz shows unique arrangement of guns in four turrets forward, leaving large space aft for seaplanes and servicing equipment.



Nachi Class, with Atagos and Mogamis, are Japan's biggest and most heavily armed cruisers. Battery arrangement is same as on the Atagos (2-1-A-2), but vertical bridge structure is more simplified (see cover).



Oldest Japanese CA's, Aobas were laid down as CL's, re-rated after Washington Treaty. They mount six 8-in. guns. Undulant deckline, sloping toward stern was introduced into Jap CA design by Aobas.



Aerial reconnaissance of Mogami CA shows 3-A-2 battery arrangement. Mogami Class has a Jap raked combined stack, lighter bridge than other Jap CA's. As CL's, these ships mounted fifteen 6-in. guns.



Powerful Atago Class cruiser swings its five twin turrets to port for a broadside. Japanese sacrifice everything to favorable battery arrangement; hence concentrated, and crowded superstructure. Since

the boilers are big, extreme trunking in forward stack is necessary to vent smoke away from bulky bridge. Two Atago cruisers have mainmast just forward of rear turrets; all have spreading pylon foremast.

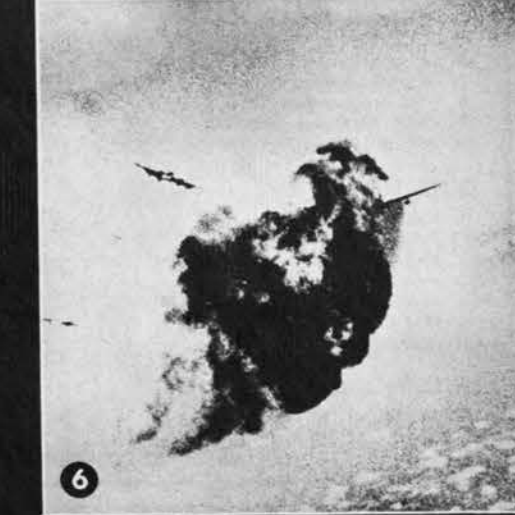
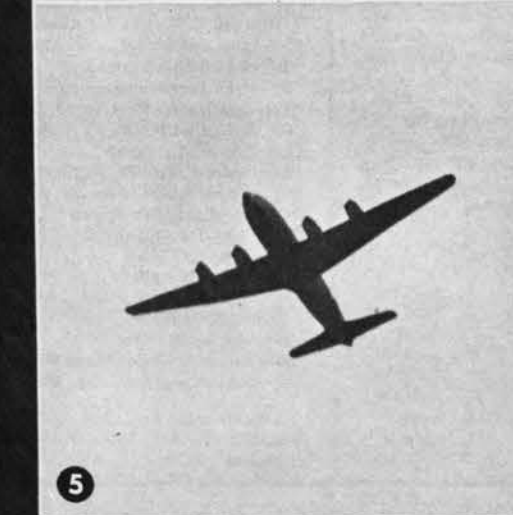
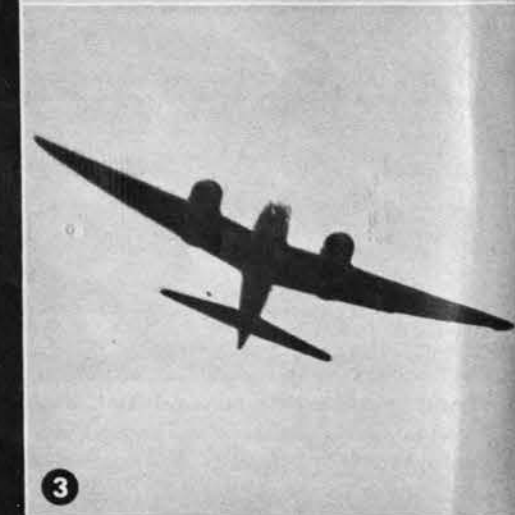
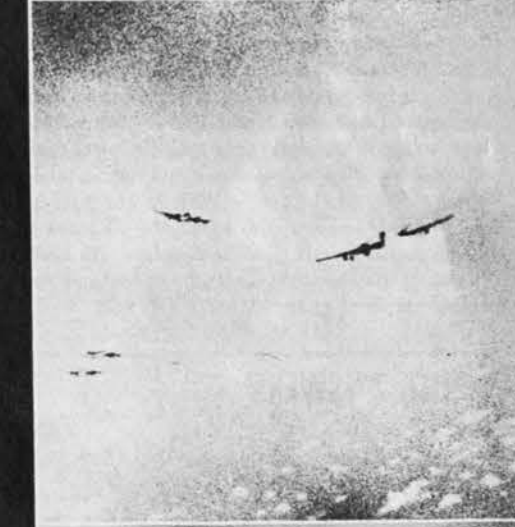
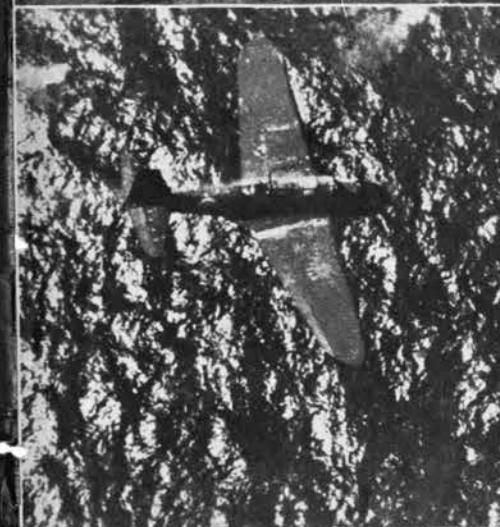
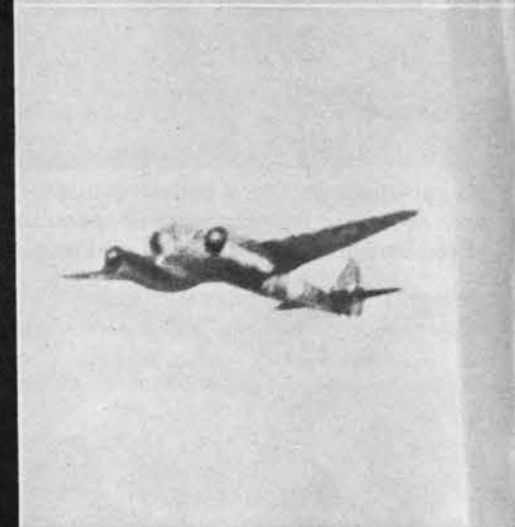
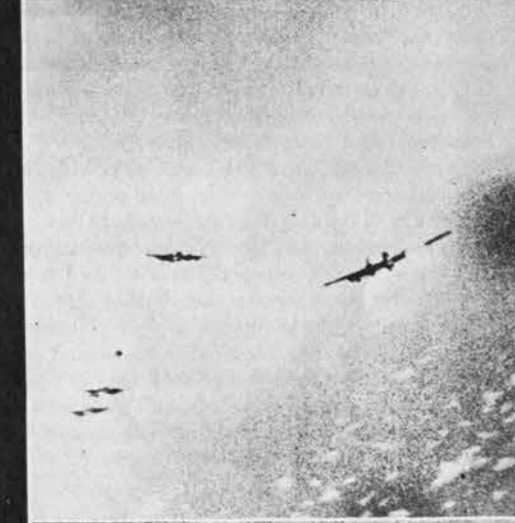
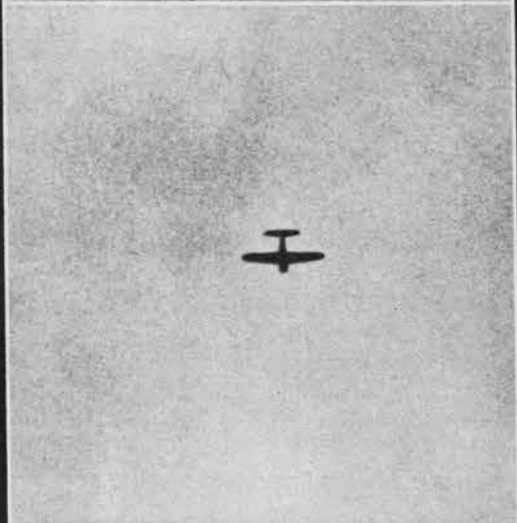
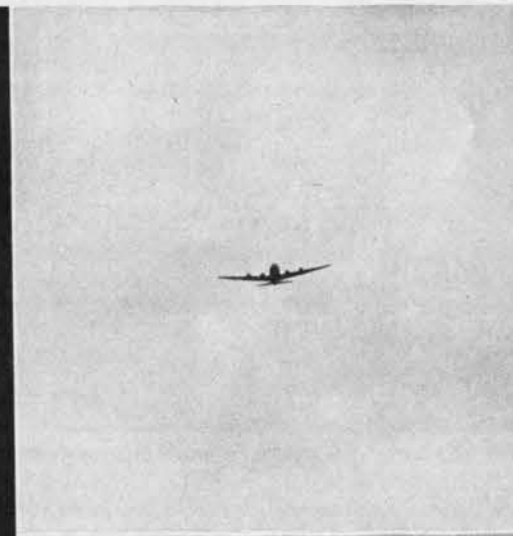
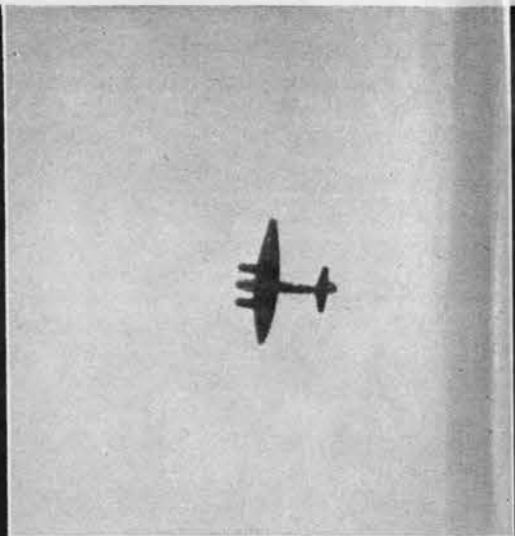
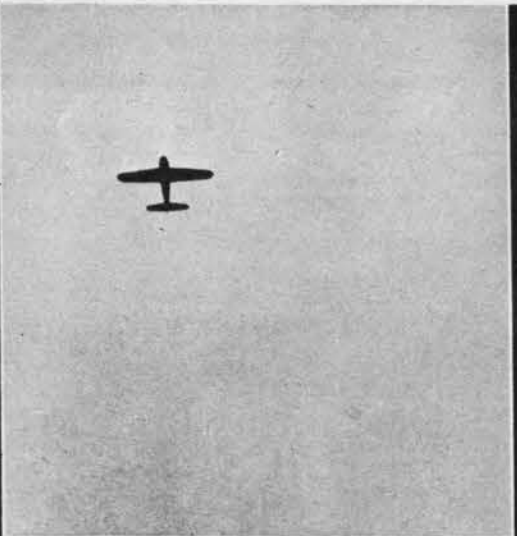


Flying over Brest Harbor, an RAF Coastal Command pilot took this reconnaissance picture of a Hipper Class cruiser at 500 ft. Sloping cinder screen and bulbous directors are typically German features.



"Pocket Battleship" Lützow is really a cruiser with unusually heavy (11-in.) guns. It has the low, rakish outline broken by heavy pole foremast and single stack which characterizes German 11-in. gun heavies.

QUIZ NO. 3: DRAMATIC SEQUENCE VIEWS SHOW FAMILIAR AIRPLANES AT DIFFERENT RANGES



1

2

3

4

5

6

NEWS & MISCELLANY

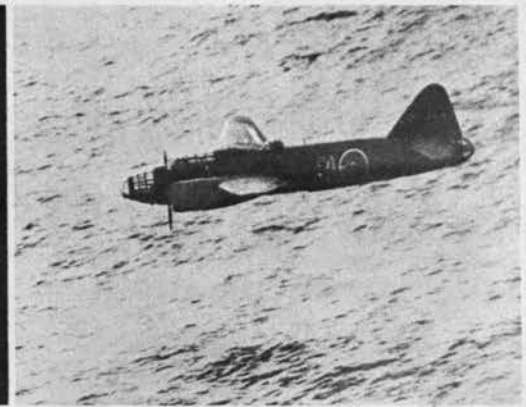
NEWS

Allied code names for Japanese aircraft have been revised in the light of recent documentary confirmation of the Japanese "Model/Type" system of designation. The new nomenclature drops "Mark numbers" altogether and uses model designations that follow the actual Japanese system. "Mark numbers" have led to many inconsistencies in the coding of modifications; and Allied code names have frequently been out of step with Jap designations to the point of making Hamp out of Zeke 32 and Dinah Mark I out of the Jap Model 2. The new designations should be much more accurate and should permit a clear follow-through of basic model developments. They should also speed up the dissemination of information on new Jap aircraft, most of which can now be coded in advance of appearance.

Since there are so many new Jap aircraft likely to appear before 1945, it is necessary to keep abreast of changes as they appear in the *Journal*. Of the newly coded aircraft, recognition material is presently available on Jack 11, Paul 11, Frances 11 and Tabby 22 and 32.

The Technical Air Intelligence Center is to be sole authority for code names. Male names will be given to Army and Navy fighters, both single and twin-engine, and to Navy reconnaissance floatplanes. Female names will be given to Army and Navy reconnaissance planes, land or carrier-based, single- or twin-engine; to Navy torpedo bombers, divebombers and flying boats; and to Army and Navy twin-engine and four-engine light, medium or heavy bombers, and transports. An aircraft with a dual function will be coded according to its primary role.

Additional information has been obtained on the Ju-252. Though also a three-engine aircraft, the Ju-252 differs from the Ju-52 in many structural details. Its low wing has a straight center section with tapered outer panels and almost square tips. The fuselage is broad and deep and the lower rear section is reported to drop down and form a loading ramp like that on the Ju-290. In contrast to the corrugated skin of the Ju-52, the 252 has a smooth metal covering on the fuselage. Its nose is long. It has a single fin and rudder and retractable landing gear.



BETTY 11 (LEFT) AND BETTY 22 SHOW DIFFERENCE IN WINGTIPS AND POSITION OF DORSAL GUNS

The six gun positions reported include a dorsal turret placed just forward of the leading edge of the wing and probably housing a 20-mm. cannon. Lateral guns may be 7.9-mm.; a ventral gun, 13-mm., and a tail gun, perhaps 30-mm. The maximum speed of the JU-252 is believed to be about 200 m.p.h. at sea level and 235 m.p.h. at 18,500 ft. The service ceiling may be around 26,000 ft.

TRAINING LIST

Three Jap planes should be added to the Class A training list: Irving 11, nightfighter and reconnaissance plane; Frances 11, medium bomber; and Jack 11, interceptor.

CORRECTIONS

The Betty shown at the top of p. 6 of the *Journal* for September is not a new model as stated, but a Betty 11 (above, left). The raked wing-tips show it to be the earlier version. What was thought to be the new power turret is actually a gun blister set only slightly behind the wing's leading edge. The turret on Betty 22 (above, right) is farther back, directly over the trailing edge of the wing.

In the August issue on page 10, the vessel pictured in dry dock is correctly identified as a modern fleet oiler rather than as a new engines-aft cargo vessel.

No procurement of the Luxury Liner (page 5, September 1944) is contemplated by the Army.

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QUIZ ANSWERS

QUIZ NO. 1

1. North Carolina Class BB, F6F
2. PBY, Benham Class DD
3. TBF, Kamikaze Class DD
4. British Passenger, Old Cargo, composite superstructure, PBY
5. TBF's, Fletcher Class DD
6. Atlanta Class CL, Kates
7. F4F, Casablanca Class CVE, Betty
8. SBD, Independence Class CVL
9. C-47, Tennessee Class BB
10. F6F, Minekaze Class DD

QUIZ NO. 2

- | | |
|-------------|----------------------|
| 1. PzKw V | 8. M-7 |
| 2. PzKw V | 9. M-10A1 |
| 3. M-5A1 | 10. Bren Gun Carrier |
| 4. M-4 | 11. M-4 |
| 5. M-10A1 | 12. U.S. Half-tracks |
| 6. M-4 | 13. Churchill |
| 7. Cromwell | |

QUIZ NO. 3

- | | |
|-----------|-----------|
| 1. FW-190 | 4. Kate |
| 2. Judy | 5. C-54 |
| 3. Ju-88 | 6. Me-110 |

QUIZ NO. 4

1. Farragut Class DD's
2. Brooklyn Class CL, Two Cleveland Class CL's
3. Illustrious Class CV
4. Cleveland Class CL, Portland Class CA, Benham-Sims Class DD, Cleveland Class CL
5. King George V Class BB
6. South Dakota Class BB
7. Farragut Class DD
8. Mutsuki Class DD's
9. Passenger-Cargo, Cargo Ship (Japanese)
10. U.S. PC

QUIZ NO. 5

- | | |
|-----------------|------------|
| 1. Sunderland | 8. Ju-52 |
| 2. PBN | 9. B-29 |
| 3. Lancaster II | 10. P-47D |
| 4. Lily | 11. Ar-240 |
| 5. P-39 | 12. Me-210 |
| 6. Mavis | 13. He-177 |
| 7. TB-7 | 14. B-26 |
| | 15. Rufe |

CREDITS

- 2—Second row left, Frank Scherschel; second row right, Walter B. Lane
10—Top, A. P.; bot., Press Association Inc. (2)
11—Top lt., Press Association Inc.; top rt., A. P.; bot., Frank Scherschel
18—Top, A. P.; bot. lt., Acme
19—Top and bot. rt., Carl Mydans
20—Bot., Ralph Morse
21—Top, Carl Mydans
22—Top lt., A. P.; top rt., Carl Mydans; bot., Eliot Elisofon
23—Top rt., European
24—Second row left, A. P.; third row left, Acme; fourth row cen., Signal Radiotelephoto from Acme
31—Cen., Otto Menge
40—Cen., Int.
44—Left, Int.; right top, A. P.
45—Top, Pix Inc.; bot. lt., Acme; bot. rt., A. P.
49—Bot. lt., Sovfoto
50—Bot. rt., USAAF Photo from Acme
51—Second row left, J. R. Eyerman

Abbreviations: Bot., Bottom; Lt., Left; Rt., Right; A. P., Associated Press; Int., International



The Japanese Nachi Class heavy cruiser, subject of the cover picture for this month, was photographed during an American bombing raid on Rabaul harbor last November by the Bureau of Aeronautics of the United States Navy.

RECONNAISSANCE BOMBER

JAPAN



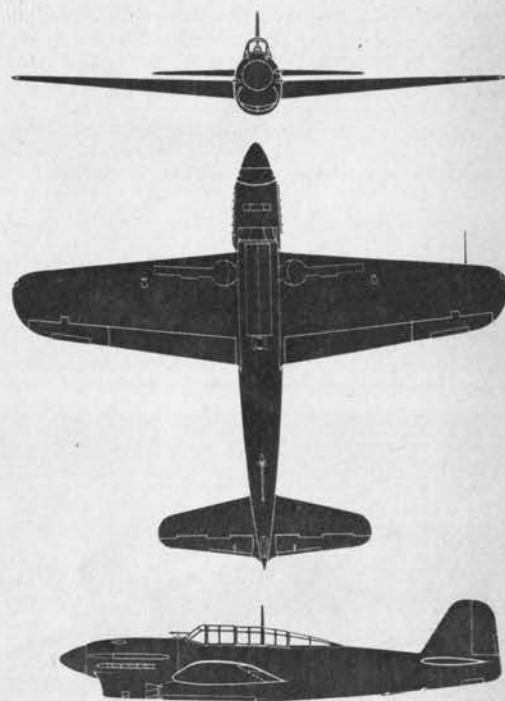
DISTINGUISHING FEATURES: Single-engine monoplane with a low mid-wing which tapers on both edges. Wingtips are rounded, very slightly raked. Tailplane also has rounded tips. Judy has an inline power plant, and its nose rounds into a large, pointed spinner. Below, the deep radiator gives the fuselage a thick appearance in beam views. Fuselage is rather long in proportion to the span. Long two-place greenhouse is low.

INTEREST: One of the most recent Japanese reconnaissance aircraft, Judy operates from carriers and has seen service as a divebomber. Armament consists of two 7.7-mm. machine guns firing from the forward fuselage and one more mounted in the rear cockpit. With a liquid-cooled engine that is rated at 1,160 hp., Judy can attain a maximum speed of about 325 m.p.h. Landing gear retracts inward. Dive brakes are fitted.

SEPTEMBER 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAE 3

JUDY



SPAN: 37 ft., 10 in.
LENGTH: 33 ft., 7 in.
APPROX. MAX. SPEED: 325 m.p.h.
SERVICE CEILING: 30,700 ft.

RESTRICTED

NOTE: This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

FIGHTER

★
U.S.S.R.



DISTINGUISHING FEATURES: Low-wing, single-engine monoplane. Wing is very broad at roots. Edges are sharply, equally tapered to pointed tips. Tailplane has sharp taper on leading edge, V-shaped cutout behind. Rudder is rounded, and has a forward sweep. Wing has moderate dihedral. Characteristically, Russian fuselage does not thin out toward tail. Cockpit canopy is of the blister type, but flattened on top.

INTEREST: The Yak-9 and La-5 are the two most outstanding Soviet fighters at present, and Yak-9's have been reported escorting U. S. heavy bombers on recent shuttle raids to and from Russian bases. The Yak-9 has also been used to protect Stormoviks on low-level attack missions. Armament is light according to U. S. standards—a 20-mm. or 37-mm. hub cannon and two 12.7-mm. firing over the engine through the propeller.

SEPTEMBER 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAE 3

YAK-9



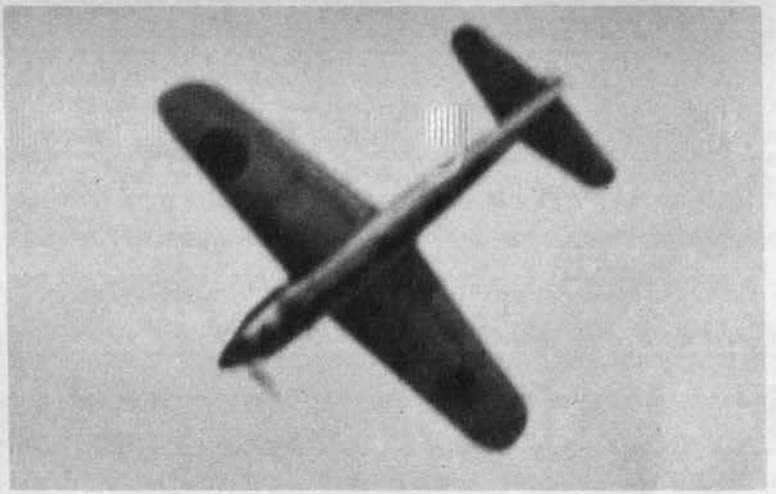
SPAN: 36 ft.
LENGTH: 30 ft., 7 in.
APPROX. MAX. SPEED: 375 m.p.h.
SERVICE CEILING: 37,000 ft.

RESTRICTED

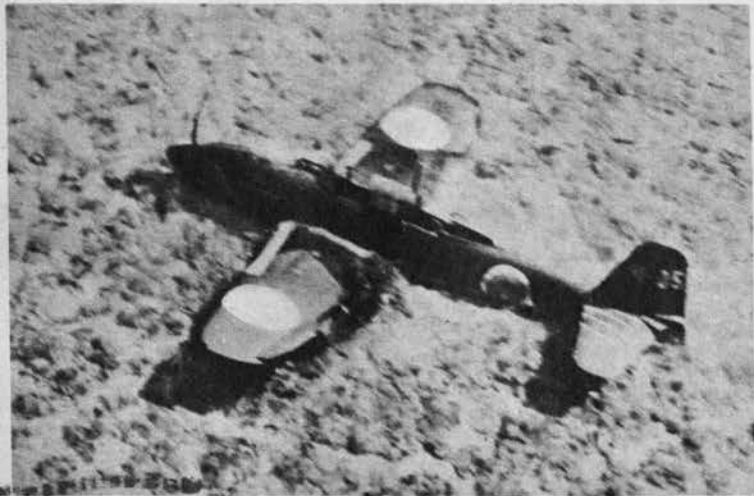
A



C



B



D



JUDY is rated as a reconnaissance bomber, and no doubt is intended by the Japs to replace the ageing Val in divebombing attacks against the U.S. fleet. The new airplane is manufactured by Aichi, and is the second Japanese experiment with inline power plants.

YAK-9 is fundamentally a redesigned Yak-1 with improved aerodynamic lines. As on recent U. S. and RAF fighters, the old faired cockpit cover is replaced by a bubble canopy. Like its predecessor, the Yak-9 is a creation of the Soviet designer, Alexander Yakovlev.

A



C



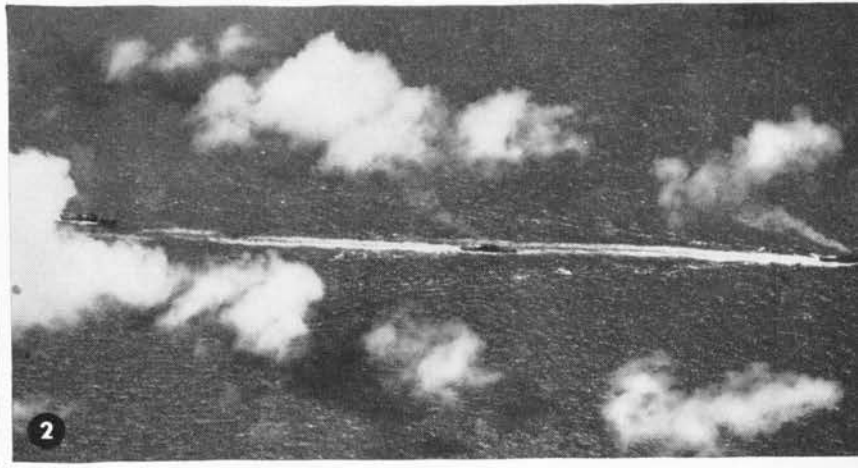
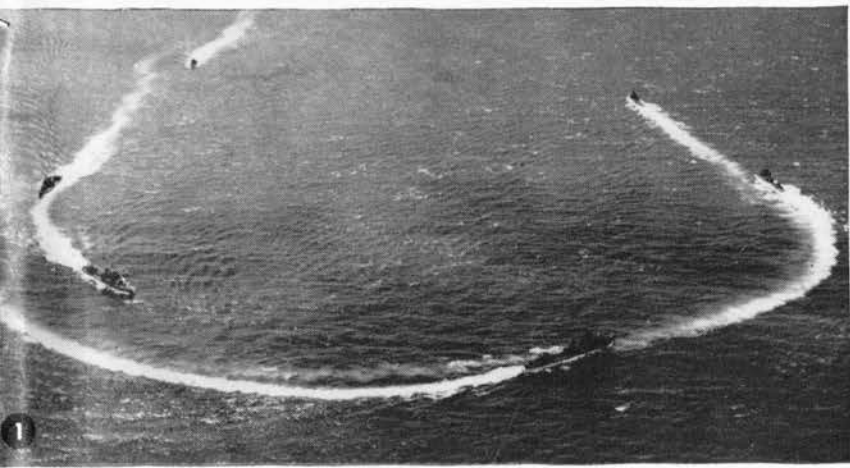
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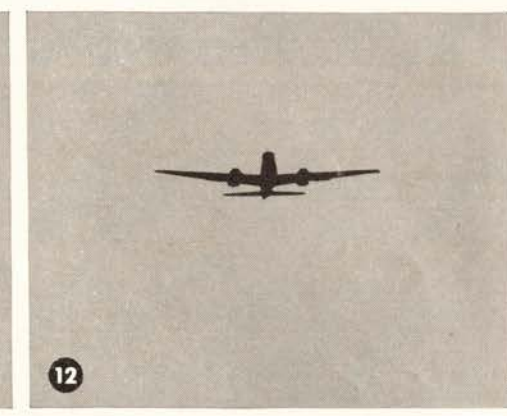
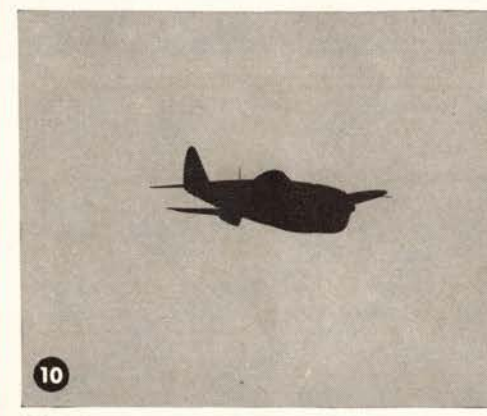
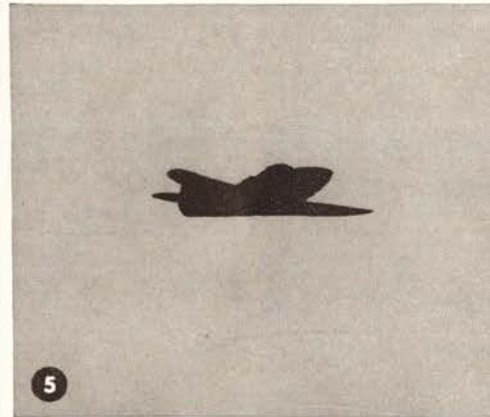
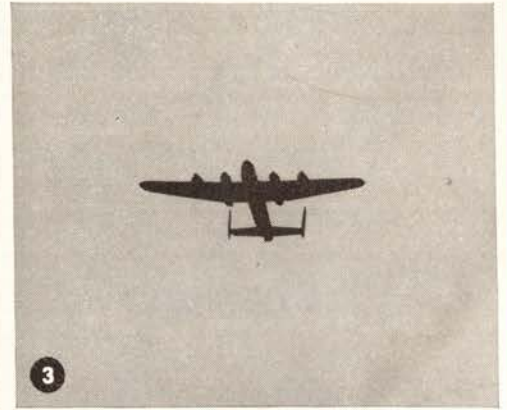
D



QUIZ NO. 4: SHIP SPOTTING FROM ABOVE



QUIZ NO. 5: FIVE MAJOR AIR FORCES



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RECOGNITION

JOURNAL



BRITISH SUBMARINE

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NOVEMBER, 1944
NUMBER 15

WAR DEPT.
NAVY DEPT.



QUIZ NO. 1: ARMOR ON THE BATTLEFIELD



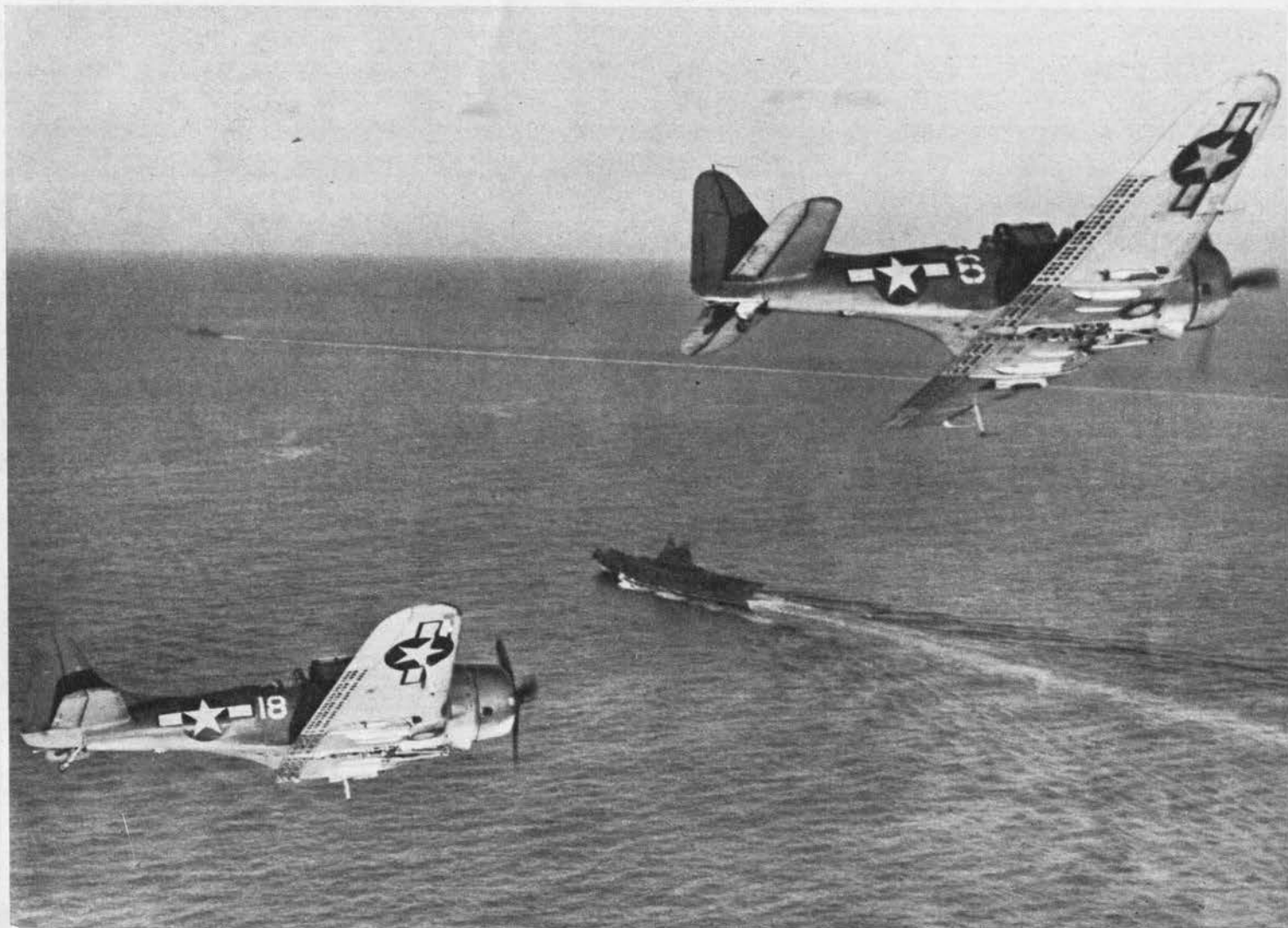
RECOGNITION

NUMBER 15

NOVEMBER, 1944

JOURNAL

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SBD'S HEAD FOR DECK OF AN ESSEX CV. UNLESS THEY APPROACH FROM STATED DIRECTIONS OR IDENTIFY THEMSELVES, SHIP IS FREE TO FIRE

WHO GOES THERE?

To the man on the attack—whether he is in a plane, ship or tank—recognition is a No. 1 servant. It can keep his conscience clear of the dread knowledge that he has killed a comrade. It can assure him of the split-second advantage in getting the enemy in his sights, of extending his victory string to the greatest possible length. But there is nothing he can do to make the other fellow recognize him. If he is to save his own skin, not to mention his equipment, he must clearly identify himself to all friendly combatants.

The proper use of identification is particularly important to airmen and submarine men. With the great speeds of modern warplanes, a flier can reach a potential attacking position before shipboard or ground-force gunners can recognize him surely. Since the men at these comparatively static emplacements may have been frequently strafed or bombed, and since they have no defense but their guns, they are understandably fast on the trigger. Unless the pilot behaves in a friendly manner and makes himself known at once, he may find himself the target of a

large warship's full battery of five-inch, 20-mm. and 40-mm. guns.

Thus a pilot is a menace unless he knows the identification procedure in his combat area and knows how to use it. He must know the extents and limits of his IFF; use it at the prescribed times and use the proper channel for the area or situation. He must follow the prescribed routes or methods of approach. He must volunteer correct identification signals and respond to challenge immediately and correctly. And above all he must use his common sense.

Do not assume that you have been recognized. Make your identification as soon as possible (U. S. warships are authorized to open fire on any and all unidentified planes approaching within 12,000 yards). Do not assume that your signals have been received. Bad visibility may prevent the ship or shore station from seeing your visual signals. Jamming, static or conflicting radio use may disrupt interphone communications. Enemy commanders may try to fake an answer. When you have considered all this, you can decide whether to attack or hold your fire.



CORAL REEFS SHELTER SEVEN U.S. BB'S, FOUR CVE'S, FOUR CRUISERS, A CONVOY OF TRANSPORTS AND SUPPLY SHIPS. LAUNCHES SHUTTLE BACK AND

FORTH AMONG SHIPS AS THEY PREPARE TO WEIGH ANCHOR FOR JAP OBJECTIVE. CAN YOU IDENTIFY SHIPS IN THIS CROSS SECTION OF OUR NAVY?

PACIFIC BASE

Huge U. S. force assembles in lagoon on its way to reclaim one more section of the Pacific

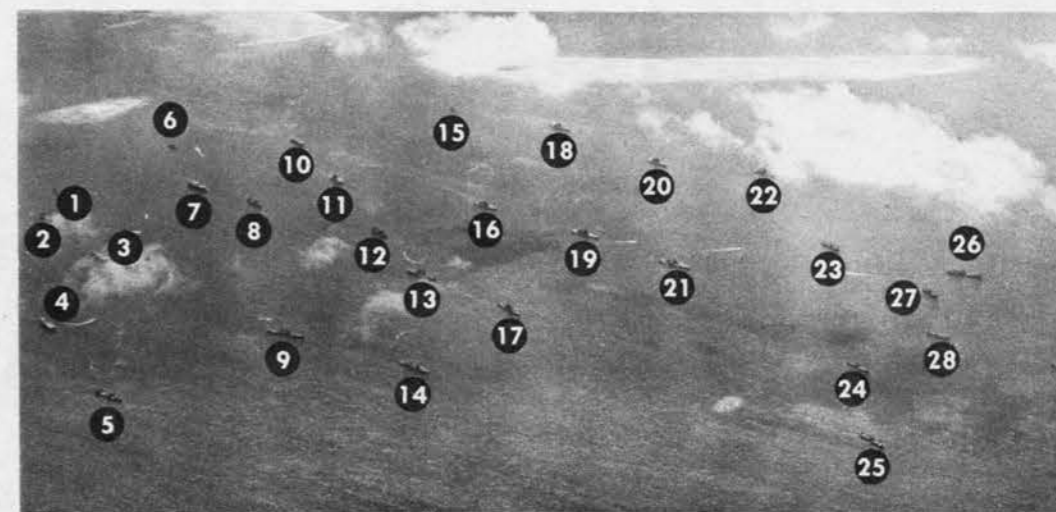
On Dec. 7, 1941 a combination of Japanese air strength, skill and treachery left many of our battleships on the bottom of Pearl Harbor. After this, the U. S. Navy battled against heavy odds to halt the great front of Jap conquest expanding across the Pacific. In the Solomons and at Midway, we dearly sold our precious force of carriers to smash the enemy's naval thrusts. Now this is history. Since those bitter days, the Navy has come a long, long way.

The great photograph above of the naval power massed for a

single operation shows better than statistics the present fighting weight of our Navy. It shows some of the battleships crippled at Pearl which have rejoined the Fleet, rebuilt and improved. It shows a few of the dozens of new escort carriers which help provide the Fleet with overwhelming air support on strikes deep into the Jap controlled islands. Seen with increasing frequency, panoramas such as this explain our successful attacks and justify the high hopes with which we move toward a showdown in Japan's home waters.

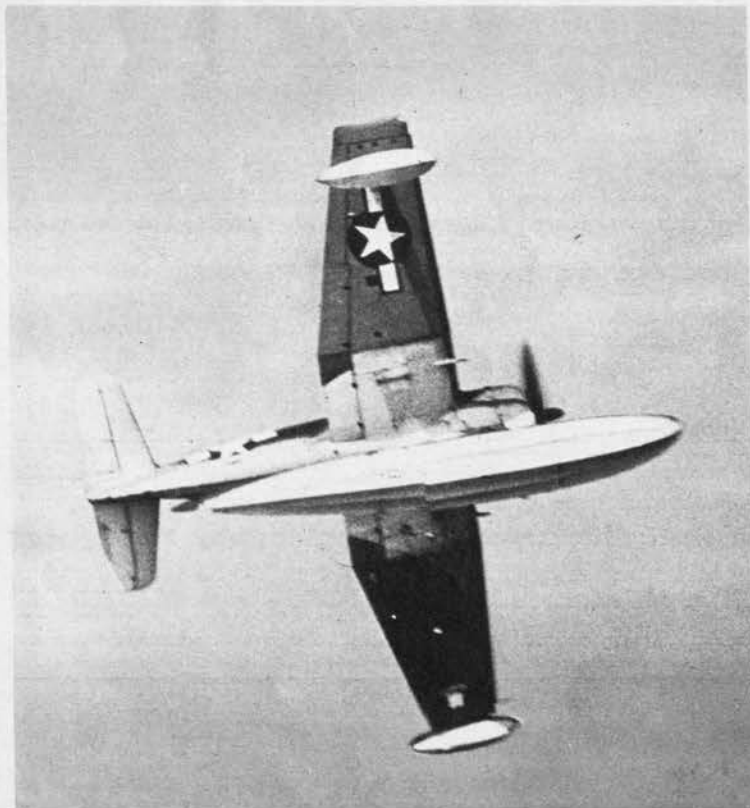
QUIZ ANSWERS

1. DD(?)
2. Tanker
3. CVE
4. CVE
5. Tanker
6. DD(?)
7. CVE
8. Tanker
9. Cleveland Class CL
10. CVE
11. Tennessee Class BB
12. Tanker
13. Cleveland Class CL
14. Portland Class CA
15. DD(?)
16. Tennessee Class BB
17. Cleveland Class CL
18. New Mexico Class BB
19. Colorado Class BB
20. New Mexico Class BB
21. Colorado Class BB
22. Pennsylvania
23. Cargo (Old)
24. Liberty
25. Liberty
26. USMC C-2 type
27. Liberty (?)
28. LST(?) with LCT on deck





CURVED LINES OF SC-1'S FIN AND RUDDER CONTRAST WITH SQUARE LINES OF WING. NOSE IS HEAVY AND EGG-SHAPED LIKE THOSE OF F6F AND P-47



Banking sharply, Sea Hawk shows float-cluttered underside. Wings are sharply angled, fuselage-long float projects well forward of nose.



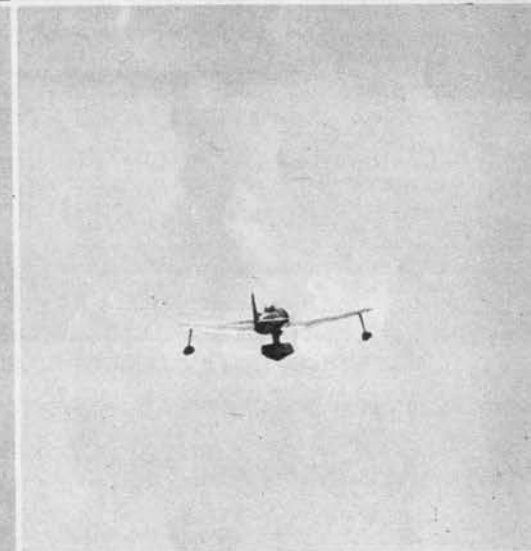
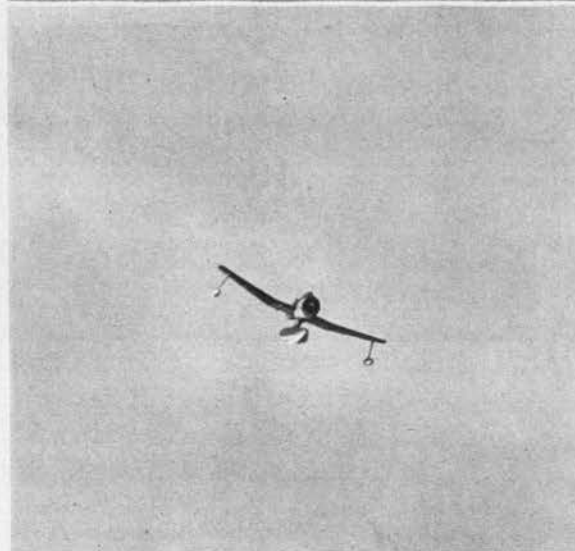
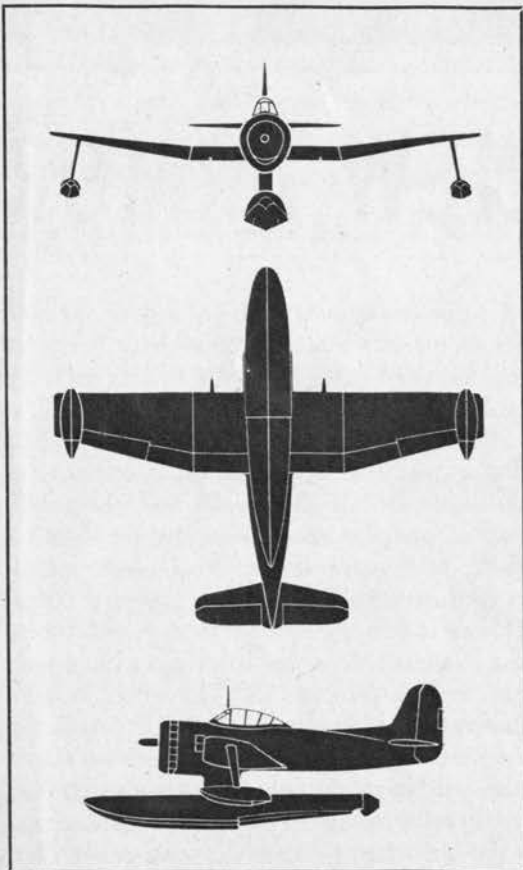
Sharp dihedral of outer wing panels gives SC-1 a distinctive head-on, tail-on appearance. The cockpit canopy forms a conspicuous blister.

SEA HAWK IS NAVY SCOUT

Now replacing the older SOC and OS2U as the aerial eyes of the Fleet is a new Navy scout plane, the SC-1 Sea Hawk. Like its predecessors, the SC-1 is primarily a ship-based aircraft, designed to be launched from the catapults on our cruisers and battleships. However it can be fitted with a fixed-wheel undercarriage for operation from land bases.

For combat use, the greatest change has been brought about by the new plane's increased power. This has meant a sizable increase in both speed and range, the most important characteristics for a scout. As the Navy's forces advance on the Island Empire, we should know what the Japanese are doing before they can guess at our plans.

Though the Japanese are using a number of floatplanes, their only single-engine, single-float monoplane at the present time is the float Zero, Rufe. Except in the always difficult head-on view, this Jap should cause no recognition trouble with the Sea Hawk, and even in this view the SC-1's deep oval cowling and straight central wing panel should make it distinguishable. From any other view, the Sea Hawk's large, bulging nose cowling, the heavy fairing on the fin, the square-tipped wing with its pronounced outboard dihedral and the long float should eliminate confusion with any other airplane now over the Pacific.



In all views, the Sea Hawk retains its distinctive appearance. Its head-on and overhead resemblance to the F6F is offset by a large single-strut float, tail fairing and cockpit blister.



FLAME-THROWING CHURCHILL TANK WHICH HAS BEEN NAMED "CROCODILE" MUST TOW A TRAILER TO PROVIDE FUEL FOR ITS WEAPON. A HIGH-VELOCITY 75 WITH MUZZLE BRAKE HAS REPLACED THE SIX-POUNDER



BIG MORTAR IN CHURCHILL TURRET IS CALLED THE "PETARD"; ITS PROJECTILE, "DUSTBIN"



Latest Nazi heavy tank is 67-ton "Pan Tiger" or "Royal Tiger." Bigger than the Tiger (PzKw VI) and just as heavily armed, it is a scaled-up Panther (PzKw V) in appearance.

NEW ARMOR IN THE WEST

Among the more prominent recent developments in armored vehicles have been two ingenious adaptations of the British infantry tank, the Churchill. Since the Churchill is well armored but too slow for open-field battles against fast German tanks, it, rather than the more mobile Cromwells and Shermans, was adapted for specialized anti-fortification work. One version, the Crocodile, incorporates a flame-thrower with a 150-yard range. This new device requires an armored trailer but evidently does not interfere with its big gun, a high-velocity 75. The other version shown here is known as A.V.R.E. (Armored Vehicle, Royal Engineers). It carries a short, large-caliber mortar which hurls an extremely powerful explosive charge at fortifications. An important German innovation is a Pan-

ther-Tiger hybrid (left) which has appeared in Poland as well as on the Western Front. Its 88-mm. gun, extreme size (24-foot length and 11-foot width) and very heavy armor would classify it as a super-Tiger were it not for the raked turret which, for recognition, makes it more like a Panther. The frontal armor plate is actually six inches thick. This great slab, together with heavy armor all over, makes the new vehicle very slow but quite adaptable to the German tactic of digging in their tanks and using them as pillboxes.

At right is a battlefield variation of the U.S. M-8 armored car. As a command car, it carries the machine gun but no turret. The regular version had the turret with 37-mm. cannon but no machine gun. The improvisation combines AA defense with forward firepower.



Exploring Périers in northern France, these American troops have a new type of M-8 armored car. A ring mount with an AA MG is set above open section of 37-mm. gun turret.



CONVERTED LST 906 FLIES TEN PIPER CUBS FROM AN IMPROVISED FLIGHT DECK. TINY PLANES SERVE AS SPOTTERS FOR FIRE FROM NAVY'S BIG GUNS

POOR MAN'S FLATTOP AIDS INVASION FIRE

One good reason for the accuracy of Allied artillery fire is the observation work done by the spotting planes of the U. S. and British ground forces. Now these small craft have gone to sea. Front-line adaptations of LST's have made it possible to launch L-planes offshore as the Allies move in on an amphibious invasion. Flight decks built out over the hold serve to get the tiny airplanes into the air so that they can seek out the enemy's shore guns, lead fire from supporting ships to target. Planes then usually land ashore.



Ramps hold four Cubs as a fifth plane takes off from the narrow runway. On this type, no provision is made for the artillery spotter's return.



Coast-Guard-manned type at Anzio was fitted to land planes. Ships were converted on the spot and are not planned as long-time measures.

SPITFIRE XIV HAS FIVE-BLADE PROP

In pre-Invasion air attack and anti-robot-bomb patrol, the Spitfire XIV already has added to the great reputation of Great Britain's veteran fighter design. The latest Spitfire has a five-bladed propeller to fully convert the 2,000-plus horsepower of its Griffon 65 engine into thrust against the rarefied air at great heights. First used in the low-altitude Spitfire XII, the Griffon now has a new high-altitude supercharger. The XIV's longer and modified nose accommodates this large engine in the trim Spitfire air frame.



Spitfire XIV in this wing-over view shows the beautiful ellipse of its wing. Leading edge is slightly straighter than on the original model.



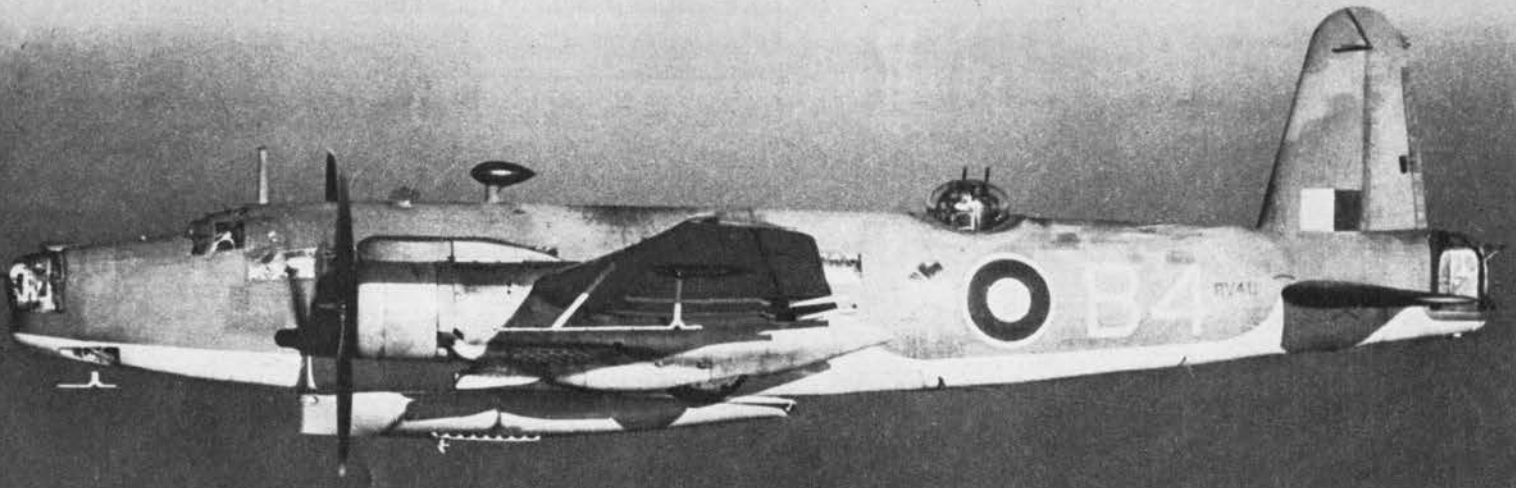
Three air scoops break the under surface of the wing. One is set at leading edge of wing beneath the fuselage; two others are outboard.



Huge spinner houses control mechanism for the new five-bladed propeller. The nose, tail and wing outlines retain familiar smooth curves.



High altitude is the specialty of the new Spitfire—its service ceiling is over 40,000 feet, rate of climb higher than that of previous models.



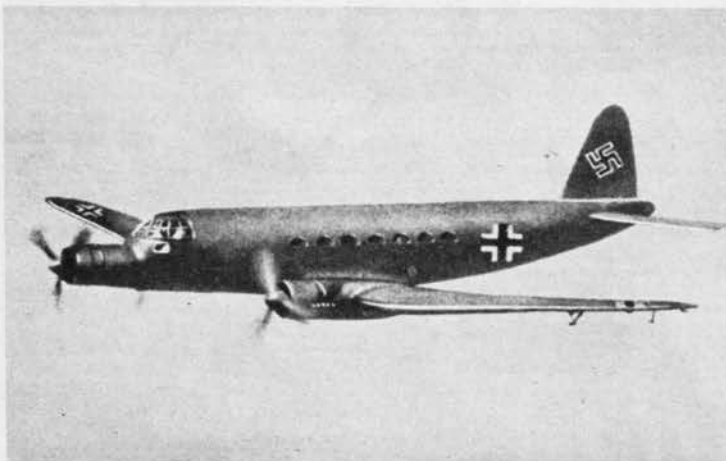
NOSE AND TAIL TURRETS SQUARE OFF ENDS OF WARWICK III. AIR-SEA RESCUE VERSION OF RAF TRANSPORT CARRIES MOTORBOAT IN BELLY



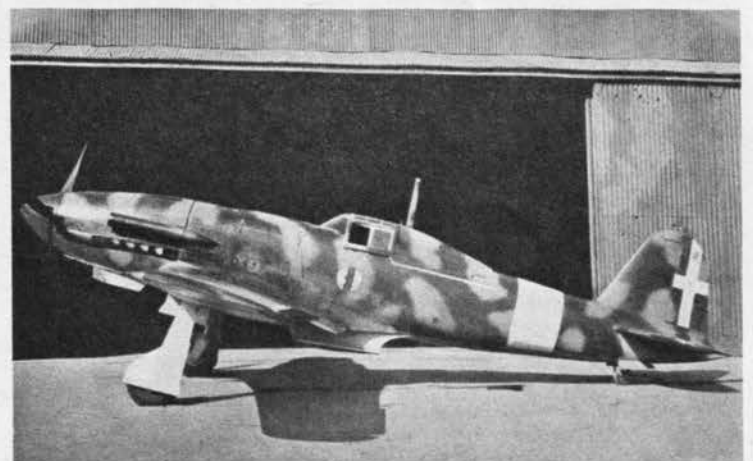
LVT(A)4 at Saipan has stubby, 75-mm. howitzer instead of 37-mm. gun found on the LVT(A)1. Redesigned turret has rear overhang.

ODD NEWS ITEMS

Heading this month's miscellaneous news is a new version of the Warwick, a transport adaptation of the Wellington bomber design which has been re-adapted to more direct military service. Intended for air-sea rescue work, the Warwick III carries a motorboat semi-internally and is protected by three powered gun turrets. The armament of the LVT(A)4, the Navy's Water Buffalo, now has been increased by adding the turret of the Army's M-8 self-propelled howitzer. The enemy is represented by new picture material on Germany's Ju-252 transport, and the G-55, an Italian-built fighter which has been pressed into service against Allied aircraft in Europe.



Trimotor Nazi transport, Ju-252 has low wing, bulky fuselage and straight dorsal line. Note curious bottleneck of nose engine mount.



Typically Italian in design, the G-55's cockpit is set far back, and its long nose pointed down. It has seen action against U. S. aircraft.

RECOGNITION TRAINING LIST

~~RESTRICTED~~

THESE LISTS ARE DESIGNED MERELY TO GUIDE RECOGNITION TRAINING IN AIRCRAFT AND ARE NOT TO BE CONSTRUED AS SUPERSEDING ANY PREVIOUSLY ISSUED DIRECTIVE. CLASS A COMPRISES AIRCRAFT THAT ARE OPERATIONALLY MOST IMPORTANT. CLASS B COMPRISES AIRCRAFT

THAT ARE OPERATIONALLY IMPORTANT IN SOME AREAS AND/OR ARE NUMERICALLY LESS IMPORTANT THAN CLASS A, AND ALSO AIRCRAFT WHICH, THOUGH NUMERICALLY IMPORTANT, ARE BEING GRADUALLY REPLACED. EMPHASIS SHOULD BE PLACED ON AIRPLANES IN CLASS A.

U. S. NAVY

CLASS A		
DESIGNATION	COMMON NAME	TYPE
FM-2	WILDCAT	1E-SSF
F6F	HELLCAT	1E-SSF
F4U	CORSAIR	1E-SSF
SC-1	SEA HAWK	1E-SO
OS2U	KINGFISHER	1E-SO
SBD	DAUNTLESS	1E-SB
SB2C	HELLDIVER	1E-SB
TBM (TBF)	AVENGER	1E-TB
PBY	CATALINA	2E-PB
PV-1*	VENTURA	2E-PB
PV-2*	HARPOON	2E-PB
PBM	MARINER	2E-PB
PB4Y-1, 2	LIBERATOR	4E-PB

CLASS B		
DESIGNATION	COMMON NAME	TYPE
J2F	DUCK	1E-J
SOC		1E-SO
SNJ	TEXAN	1E-N
PB2Y	CORONADO	4E-PB
TDR-1		2E

*RECOGNITIONALLY ALMOST THE SAME

U. S. ARMY

CLASS A		
DESIGNATION	COMMON NAME	TYPE
P-38	LIGHTNING	2E-SSF, R
P-40	WARHAWK	1E-SSF
P-47	THUNDERBOLT	1E-SSF
P-51	MUSTANG	1E-SSF
P-61	BLACK WIDOW	2E-NF
P-63	KINGCOBRA	1E-SSF
A-20	HAVOC	2E-LB
A-26	INVADER	2E-MB
B-17	FORTRESS	4E-HB
B-24	LIBERATOR	4E-HB
B-25	MITCHELL	2E-MB
B-29	SUPERFORTRESS	4E-HB
C-46	COMMANDO	2E-C
C-47, C-53	SKYTRAIN	2E-C
C-54	SKYMASTER	4E-C
C-87 (B-24)	LIBERATOR EXPRESS	4E-C
L-4	GRASSHOPPER	1E-L
L-5	SENTINEL	1E-L

CLASS B		
DESIGNATION	COMMON NAME	TYPE
B-26	MARAUDER	2E-MB
C-60	LODESTAR	2E-C
CG-4A		G
CG-13		G

BRITISH RAF

CLASS A		
DESIGNATION	COMMON NAME	TYPE
	SPITFIRE	1E-SSF
	TYPHOON	1E-SSF
	TEMPEST V	1E-SSF
	MOSQUITO	2E-2SF, LB
	BEAUFIGHTER	2E-2SF
	LANCASTER	4E-HB
	HALIFAX	4E-HB
	SUNDERLAND	4E-PB

CLASS B		
DESIGNATION	COMMON NAME	TYPE
	ALBEMARLE	2E-C
	HURRICANE	1E-SSF
	WARWICK	2E-C
	WELLINGTON	2E, MB, TB
	STIRLING	4E-HB
	YORK	4E-C
	HORSA	G

BRITISH ROYAL NAVY

CLASS A		
DESIGNATION	COMMON NAME	TYPE
	BARRACUDA	1E-TB
	FIREFLY	1E-2SF

CLASS B		
DESIGNATION	COMMON NAME	TYPE
	ALBACORE	1E-TB, R
	SEA OTTER	1E-R
	SWORDFISH	1E-TB, R

U. S. S. R. ARMY

CLASS A		
DESIGNATION	COMMON NAME	TYPE
YAK-9		1E-SSF
LA-5		1E-SSF
IL-2, 3, 4	STORMOVIK	1E-LB
PE-2 & PE-2B (PE-3)		2E-DB, LB
SB-3		2E-MB
DB-3F		2E-MB, TB
TB-7		4E-HB
PS-84 (Russian-built DC-3)		2E-C

CLASS B		
DESIGNATION	COMMON NAME	TYPE
LAGG-3		1E-SSF
YAK-1		1E-SSF
MIG-3		1E-SSF

U. S. S. R. NAVY

CLASS A		
DESIGNATION	COMMON NAME	TYPE
MDR-6		2E-R
GST (Russian-built PBY)		2E-PB

CLASS B		
DESIGNATION	COMMON NAME	TYPE
KOR-1		1E-FP, R

AMERICAN AIRCRAFT USED BY SOVIETS

P-39	AIRACOBRA	1E-SSF
P-40	WARHAWK	1E-SSF
P-47	THUNDERBOLT	1E-SSF
P-51	MUSTANG	1E-SSF
P-63	KINGCOBRA	1E-SSF
A-20	HAVOC	2E-LB
B-25	MITCHELL	2E-MB
AT-6	TEXAN	1E-N
AT-19	RELIANT	1E-J

GERMAN

CLASS A		
DESIGNATION	COMMON NAME	TYPE
ME-109		1E-B, SSF
ME-110		2E-B, 2SF
ME-410		2E-B, 2SF
FW-190		1E-B, SSF
JU-88		2E-MB, DB, F, R
JU-188		2E-MB, DB
DO-217		2E-MB, DB
HE-111		2E-MB, TB
FW-200		4E-HB
HE-177		2E-HB, R

JAPANESE

CLASS A		
DESIGNATION	COMMON NAME	TYPE
T-2	NICK	1E-2SF
RAIDEN	JACK	1E-SSF
T-3	TONY	1E-SSF
T-2	TOJO	1E-SSF
T-2	OSCAR	1E-SSF
T-0	ZEKE 52	1E-SSF
T-2	RUFE	1E-SSF (FP)
GEKKO	IRVING	2E-2S-NF, R
T-2	JAKE	1E-RFP
T-0	PETE	1E-RFP
T-2?	PAUL	1E-RFP
T-100	DINAH	2E-R
T-1	MYRT	1E-R
T-2	JUDY	1E-DB, R
T-2	JILL	1E-TB
T-97	KATE	1E-TB
T-99	VAL	1E-DB
T-3?	FRANCES	2E-MB, NF
T-1	BETTY	2E-MB, R
T-100	HELEN	2E-MB
T-97	SALLY	2E-MB
T-99	LILY	2E-LB
T-2	EMILY	4E-PB

CLASS B		
DESIGNATION	COMMON NAME	TYPE
T-0	ZEKE 32	1E-SSF
T-97	NATE	1E-SSF
T-99	SONIA	1E, LB, R
T-98	BABS	1E-R
T-96	NELL	2E-MB
T-97	MAVIS	2E-PB
T-0	TABBY	2E-C
T-0	TESS	2E-C
T-100	TOPSY	2E-C
T-0	THELMA	2E-C
T-1	THERESA	2E-C

ABBREVIATIONS

B.....	BOMBER
C.....	CARGO, TRANSPORT
F.....	FIGHTER
G.....	GLIDER
J.....	UTILITY
L.....	LIAISON
N.....	TRAINER
R.....	RECONNAISSANCE
DB.....	DIVEBOMBER
FP.....	FLOATPLANE
HB.....	HEAVY BOMBER
LB.....	LIGHT BOMBER
MB.....	MEDIUM BOMBER
NF.....	NIGHTFIGHTER
PB.....	PATROL BOMBER
SB.....	SCOUT BOMBER
SO.....	SCOUT OBSERVATION
TB.....	TORPEDO BOMBER
RFP.....	RECONNAISSANCE FLOATPLANE
SSF.....	SINGLE-SEAT FIGHTER
2SF.....	TWO-SEAT FIGHTER
1E.....	SINGLE-ENGINE
2E.....	TWIN-ENGINE
4E.....	FOUR-ENGINE

WARSHIPS RECOGNITION TRAINING LIST RESTRICTED

THE FOLLOWING TRAINING LIST IS DESIGNED TO SIMPLIFY RECOGNITION OF SURFACE VESSELS. SIMILAR SHIPS OF THE SAME TYPE ARE COMBINED FOR RECOGNITION PURPOSES. SHIPS LISTED UNDER CLASS A ARE MOST IMPORTANT FROM A NUMERICAL OR OPERATIONAL STAND-

POINT. THIS IS THE "MUST LIST." CLASS B SHIPS ARE LESS IMPORTANT, SHOULD BE TAKEN UP AFTER CLASS A IS MASTERED. UNDER EACH ITEM, THE WORD CLASS INDICATES THAT MORE THAN ONE SHIP OF SIMILAR CONSTRUCTION EXISTS. THE SHIP NAME ALONE MEANS A SINGLE VESSEL.

UNITED STATES

BATTLESHIPS (BB)

CLASS A

NEW YORK CLASS—ARKANSAS
PENNSYLVANIA
NEW MEXICO CLASS
TENNESSEE CLASS—WEST VIRGINIA
NORTH CAROLINA CLASS
SOUTH DAKOTA CLASS
IOWA CLASS

CLASS B

NEVADA
COLORADO CLASS

LARGE CRUISERS (CB)

CLASS A

ALASKA CLASS

AIRCRAFT CARRIERS (CV)

CLASS A

SARATOGA
ENTERPRISE
ESSEX CLASS

CLASS B

RANGER

AIRCRAFT CARRIERS, LIGHT (CVL)

CLASS A

INDEPENDENCE CLASS

AIRCRAFT CARRIERS, ESCORT (CVE)

CLASS A

CVE (BOGUE—SANGAMON—CASABLANCA CLASSES)

HEAVY CRUISERS (CA)

CLASS A

NORTHAMPTON—PORTLAND—PENSACOLA CLASSES
NEW ORLEANS CLASS
BALTIMORE CLASS

CLASS B

WICHITA

LIGHT CRUISERS (CL)

CLASS A

OMAHA CLASS
BROOKLYN CLASS—ST. LOUIS
CLEVELAND CLASS

CLASS B

ATLANTA CLASS

DESTROYERS (DD)

CLASS A

OLD "FLUSH DECKERS"
OLD 1 STACK (GRIDLEY—BAGLEY—BENHAM—SIMS—SOMERS CLASSES)
OLD 2 STACK (BENSON—LIVERMORE—MAHAN—DUNLAP—PORTER—FARRAGUT CLASSES)
FLETCHER—SUMNER CLASSES
DESTROYER ESCORTS (DE CLASSES)

NOTE BB: COLORADO CLASS SUBJECT TO FURTHER CHANGE IN APPEARANCE

BRITISH

BATTLESHIPS (BB)

CLASS A

QUEEN ELIZABETH—VALIANT—WARSPITE
NELSON CLASS
KING GEORGE V CLASS

CLASS B

ROYAL SOVEREIGN CLASS—MALAYA
RENOWN

AIRCRAFT CARRIERS (CV)

CLASS A

FURIOUS
ILLUSTRIOUS—IMPLACABLE CLASSES—
INDOMITABLE

AIRCRAFT CARRIERS, ESCORT (CVE)

CLASS A

CVE (BATTLER—ARCHER—NAIRANA CLASSES—
ACTIVITY)

CLASS B

UNICORN
PRETORIA CASTLE

HEAVY CRUISERS (CA)

CLASS A

KENT—DEVONSHIRE CLASSES—NORFOLK

CLASS B

LONDON
HAWKINS CLASS

LIGHT CRUISERS (CL)

CLASS A

DRAGON—CARLISLE CLASSES—ADVENTURE
(CM)
LEANDER CLASS
DIDO CLASS
FIJI—SOUTHAMPTON CLASSES

CLASS B

EMERALD
ARETHUSA CLASS—HOBART
ADELAIDE
BELFAST

DESTROYERS (DD)

CLASS A

TOWN CLASS (EX U.S.)
2 STACK ("A" TO "I"—WALLACE—DOUGLAS—
SAGUENAY—CODRINGTON—TRIBAL CLASSES)
NEW 1 STACK ("J" to "W"—HUNT CLASSES)

CLASS B

OLD 2 STACK ("V" TO "W"—WAIRS CLASSES)
NOTE CL: CALEDON CLASS OMITTED BECAUSE
OF CHANGE IN OPERATIONAL
STATUS.

FRENCH

BATTLESHIPS (BB)

CLASS A

RICHELIEU

LIGHT CRUISERS (CL)

CLASS A

LA GALISSONNIERE CLASS

CLASS B

EMILE BERTIN

DESTROYERS (DD)

CLASS A

LE FANTASQUE CLASS

NOTE CL: JEANNE D'ARC OMITTED BECAUSE
OF CHANGE IN OPERATIONAL
STATUS.

JAPANESE

BATTLESHIPS (BB)

CLASS A

KONGO CLASS
FUSO CLASS
ISE CLASS
NAGATO CLASS
YAMATO CLASS

AIRCRAFT CARRIERS (CV)

CLASS A

SHOKAKU CLASS
HAYATAKA CLASS
TAIHO

AIRCRAFT CARRIERS, LIGHT (CVL)

CLASS A

ZUIHO CLASS
CHITOSE CLASS

CLASS B

HOSHO

AIRCRAFT CARRIERS, ESCORT (CVE)

CLASS A

OTAKA CLASS—KAIYO

HEAVY CRUISERS (CA)

CLASS A

NACHI—AOBA CLASSES
ATAGO CLASS—CHOKAI—MAYA
MOGAMI CLASS
TONE CLASS

LIGHT CRUISERS (CL)

CLASS A

KUMA—NATORI
AGANO CLASS

DESTROYERS (DD)

CLASS A

OLD 2 STACK (MUTSUKI—KAMIKAZE—
MINEKAZE—WAKATAKE—MOMI CLASSES)
NEW 2 STACK (FUBUKI—SHIGURE—
HATSU HARU—ASASHIO CLASSES)
TERUTSUKI CLASS

CLASS B

CHIDORI—OTORI CLASS (TB)

NOTE CV: RECOGNITION MATERIAL BEING
PREPARED ON TAIHO

NOTE CVL: HOSHO NOW RATED AS CVL

NOTE CL: SENDAI CLASS, KATORI CLASS,
TENRYU CLASS AND YUBARI ARE
NOT INCLUDED ON THIS LIST
BECAUSE OF CHANGE IN
OPERATIONAL STATUS.

OTHER TYPES

MERCHANT SHIP TYPES

PASSENGER
PASSENGER—CARGO
CARGO—(COMPOSITE SUPERSTRUCTURE)
(SPLIT SUPERSTRUCTURE)
ENGINES AFT—
(TANKER, CARGO, WHALER)

NOTE (1): MERCHANT VESSELS OF ALL
NATIONS INCLUDED UNDER THE
ABOVE TYPES
(2): CONVERSIONS OF MERCHANT
SHIPS USED AS NAVAL AUXILIARIES
ARE CLASSIFIED AS MERCHANT
SHIPS.

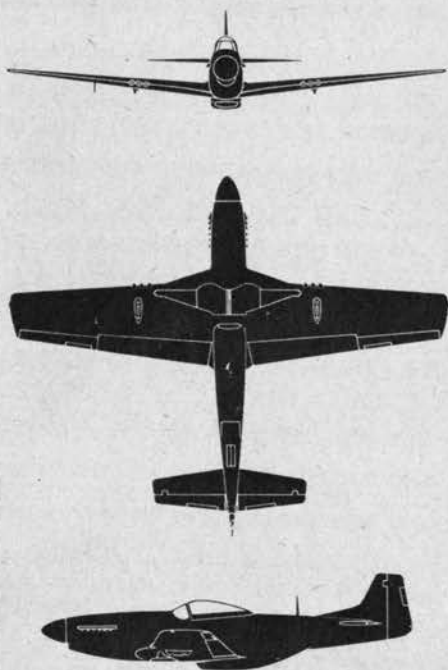
LANDING CRAFT—U. S. AND BRITISH

LANDING SHIP, TANK (LST)
LANDING SHIP, DOCK (LSD)
LANDING SHIP, MEDIUM (LSM)
LANDING CRAFT, INFANTRY (LCI)
LANDING CRAFT, TANK (LCT)
LANDING CRAFT, MECHANIZED (LCM)
LANDING CRAFT, SUPPORT (LCS)
LANDING CRAFT, CONTROL (LCC)
LANDING CRAFT, VEHICLE AND PERSONNEL
(LCVP)
LANDING VEHICLE, TRACKED AND LANDING
VEHICLE, TRACKED (ARMORED)—(LVT &
LVT(A))
DUCK—2½ TON AMPHIBIAN TRUCK
NOTE: BRITISH HAVE NUMEROUS
ADDITIONAL MINOR VARIATIONS OF
BASIC TYPES.

JAPANESE

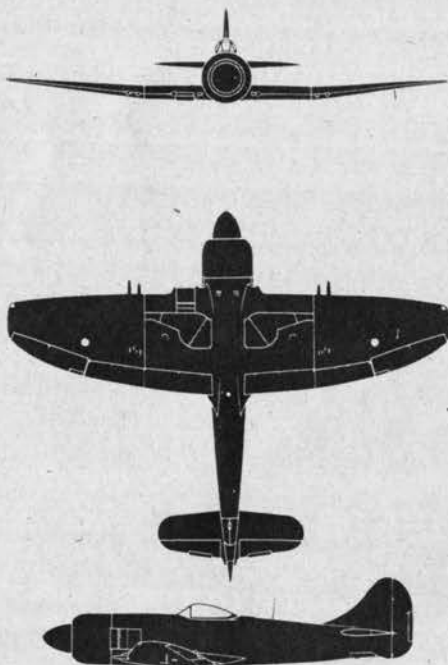
TYPE A	TYPE E
TYPE B	TYPE F
TYPE C	TYPE G
TYPE D	LANDING CRAFT CARRIER

NEW AND REVISED AIRPLANE SILHOUETTES



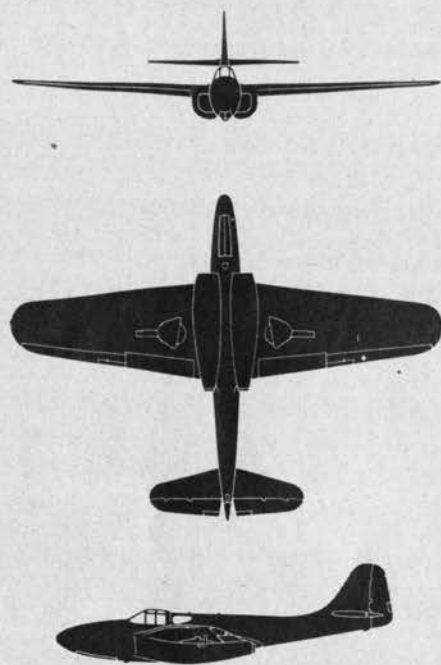
P-51D

SPAN 37 FT. LENGTH 32 FT. 3 IN.
NEW MUSTANG HAS FAIRED FIN AND WING



TEMPEST II

SPAN 41 FT. LENGTH 34 FT. 6 IN.
RADIAL-ENGINE VERSION OF RAF FIGHTER

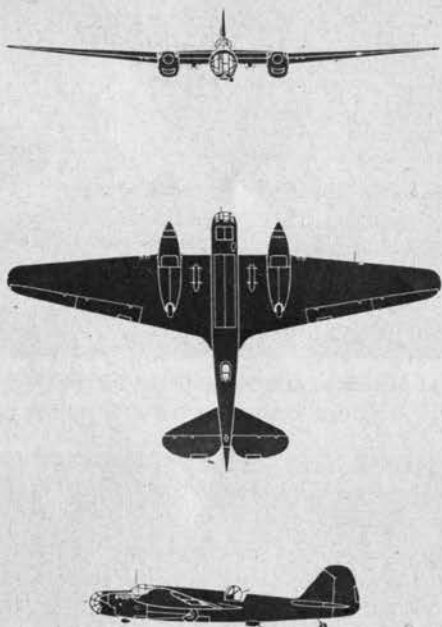


P-59A

SPAN 49 FT. LENGTH 38 FT. 2 IN.
TWIN-JET SQUIRT RESEMBLES P-39 AND P-63

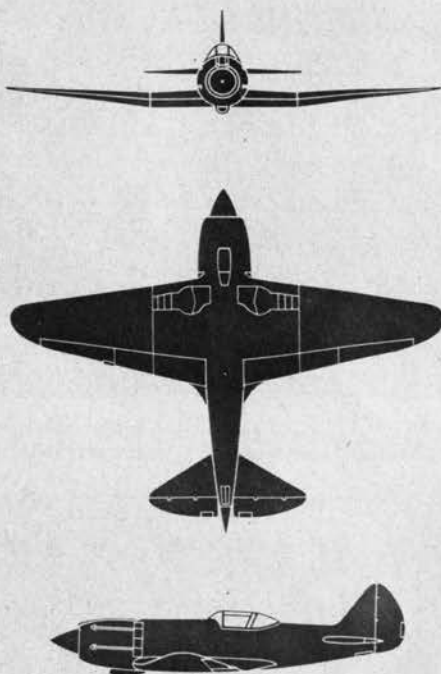
No. 1 AAF fighter, the Mustang has changed form greatly since its first appearance. Latest changes include added fairing on the fin and wing leading edge. An RAF innovation is the installation of an air-

cooled Bristol engine in the Tempest air frame. Designated Tempest II, it is the first top-flight RAF fighter of the war to have a radial power plant. P-59 Airacomet was pictured in the August *Journal*.



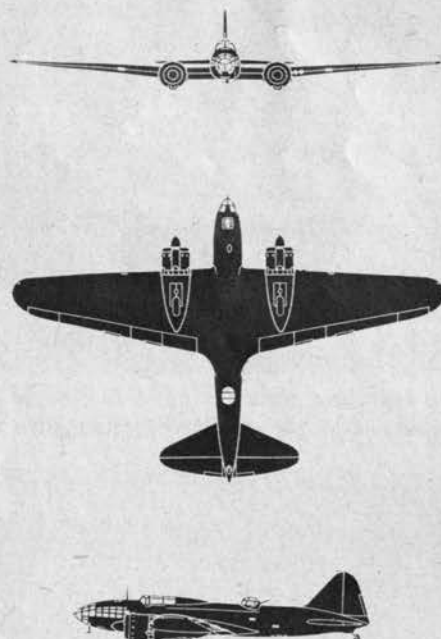
SB-3

SPAN 66 FT. 11 IN. LENGTH 41 FT.
SOVIET MEDIUM CARRIES A CREW OF THREE



MIG DEVELOPMENT

SPAN 37 FT. 6 IN. LENGTH 31 FT. 2 IN.
RED AIR FORCE RADIAL-ENGINE FIGHTER

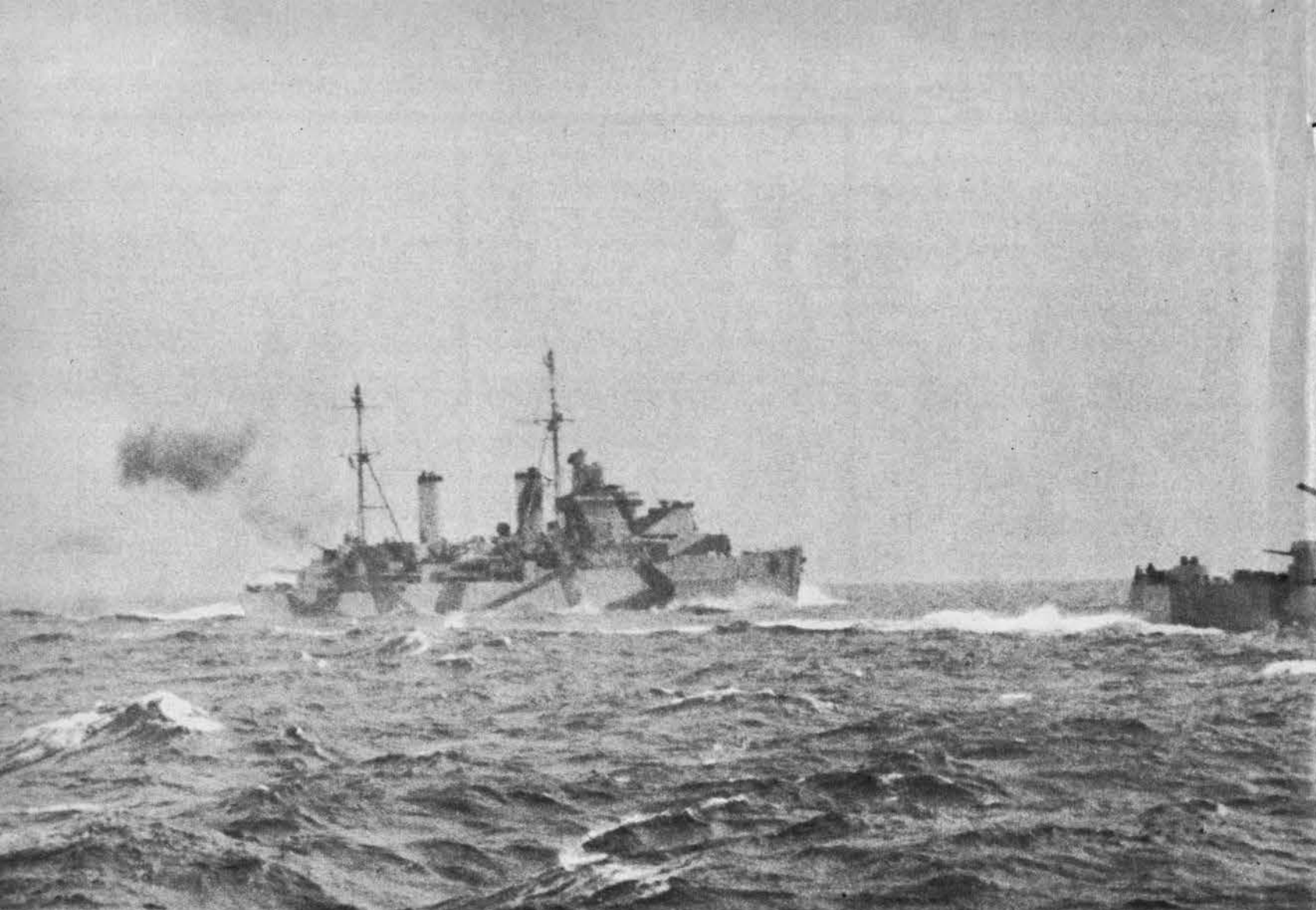


DB-3F

SPAN 70 FT. 2 IN. LENGTH 47 FT. 7 IN.
FIRST SOVIET AIRPLANE TO BOMB BERLIN

Soviet air power was summarized in the July 1944 issue of the *Journal*. At that time our information was limited. Since then, however, more data have accumulated so that the armed services have

been able to develop more accurate silhouettes. Silhouettes of three Soviet planes—the SB-3, MIG development and the DB-3F—are shown above. More will be presented on this page in an early issue.



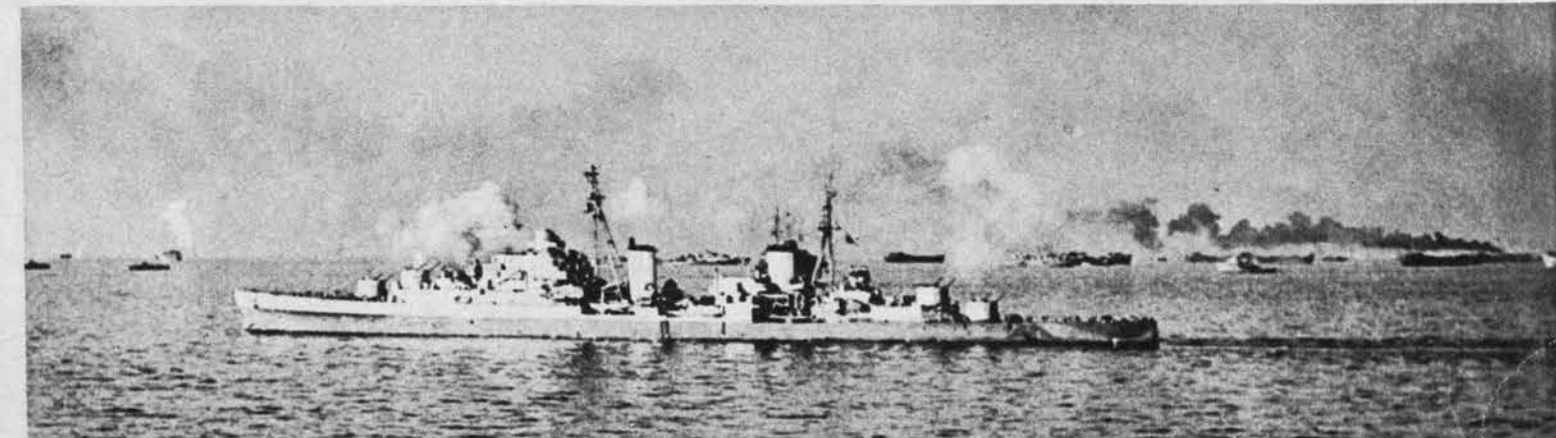
PLOWING THROUGH MEDITERRANEAN, BRITISH DIDO (RIGHT) AND ARETHUSA FIRE AT LIBYAN COAST. OLDER DIDOS HAVE TEN 5.25 IN. DP GUNS IN



THREE TURRETS FORWARD, TWO AFT. CHARYBDIS GROUP OF DIDOS CARRIES EIGHT IN TWIN MOUNTS. BOTH HAVE WIDELY SPACED RAKING STACKS



New Fiji Class cruiser lets go 6-in. broadside from four triple turrets. Basically, Fijis are smaller Southamptons with the same armament. Uganda Class is similar but lacks after superfiring turret. Note the upright stacks of unequal height, forward one rising from boxy hangar.



Off Anzio, vertical-stacked Dido shells shore positions ahead of Allied landing craft. Britain's newest cruisers, this group of Didos is distinguished from balance of class by long, prominent deckhouses, forward, vertical stacks and masts, reduced armament in four turrets.

LIGHT CRUISERS

Built to fit specific national needs, the CL fleets of the world form a varied naval group

Large, growing fleets of lightweights have absorbed a great share of naval operations in World War II. CL's are prominent in new cruiser construction to take up slack left by the expanding scope of naval warfare. Of the three major sea powers, only the U. S. has pushed its heavy-cruiser building program. Meanwhile British and Japanese as well as U. S. shipyards have been working steadily on reinforcements for the light cruiser squadrons.

In the fluid realm of tactics this war finds CL's and CA's used interchangeably on cruiser missions. Though many CL's are several thousand tons smaller than CA's and all have main batteries of lighter caliber, they perform the same missions as the heavies at shorter ranges. Both types of cruiser have escorted convoys, supported amphibious attack and have scouted disputed waters when dirty weather hampered naval aviation. In actual combat, especially in-fighting, the CL with a numerous battery of smaller guns can deliver a greater volume of fire than the heavy cruiser. More than in past naval practice, CL's and CA's now form a homogeneous fighting group, except in the matter of effective range. With the exception of Great Britain, however, all navies continue to separate the two, classifying as CL's all cruisers with guns up to 6.1 inches in caliber.

Range has had great influence on the various national cruiser

philosophies. Britain's empire gives her a vast, scattered coast line to protect, but also a system of closely spaced supply bases. This naval problem caused the Admiralty to sacrifice range and armament for numbers, and to invest Treaty tonnage allotments in smaller ships. Lighter vessels are useful in guarding vital sea lanes and convoys, while individual weakness is offset by ability to gather a number of warships quickly.

In the late '30's, the 9,000-ton Southampton Class was built to answer Japanese Mogamis and U. S. Brooklyns which carried fifteen 6-in. guns. Even though Treaty limits have now been swept away by the war, Britain has again scaled down the size and armament on the recent Dido and Fiji Classes.

Faced with long distances and huge blank areas in the Pacific, both Japan and the U. S. prefer large cruisers with great sea-keeping ability. The Aganos excepted, Japan has built no CL's since the early 20's, and before the war rearmed the Mogami ships as CA's. Though its CL fleet is much more modern, the U. S. Navy has nonetheless built large 10,000-ton light cruisers. Our principal CL classes—the Cleveland and Brooklyn—both stem from a projected group of Treaty-weight heavies. The U. S. has experimented with the smaller Atlanta Class, but thus far they are a supplementary size of CL, not a reversal of our large cruiser policy.

GREAT BRITAIN'S NAVY SPECIALIZES IN MANY LIGHTLY GUNNED CL'S OF SMALL SIZE



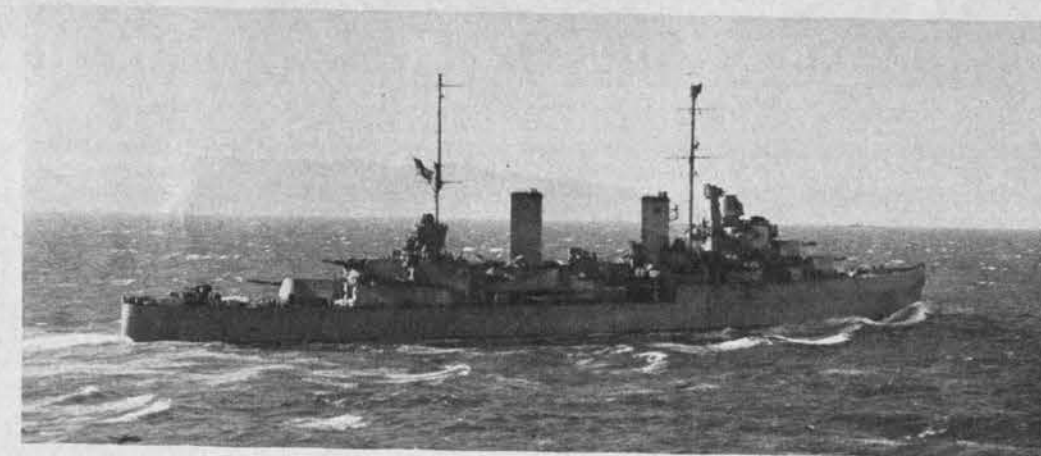
H.M.S. BELFAST IS AN "IMPROVED SOUTHAMPTON." LIKE SOUTHAMPTONS, BELFAST HAS 6-IN. GUNS IN TRIPLE TURRETS, BUT HAS SECOND RAKED STACK

ABFT MAINMAST AND HIGHER DECKHOUSES AFT



FORWARD STACK ON REGULAR SOUTHAMPTON CL IS HIGHER AND RISES FROM AIRCRAFT HANGAR. BELOW, LOW OUTLINE AND UPRIGHT STACKS OF TWO

ARETHUSAS BLEND INTO THE ICELAND SHORELINE



H.M.S. Hobart of Australian Navy is described as a "Modified Leander" (below). Hobart carries same armament of eight 6-in. guns in twin turrets, but has two vertical stacks like Arethusas.



In New Zealand's Navy are two units of the Leander Class, only single-stacked British 6-in. gun cruisers. Leanders have fine war record, including Cape Matapan and trapping of the Graf Spee.

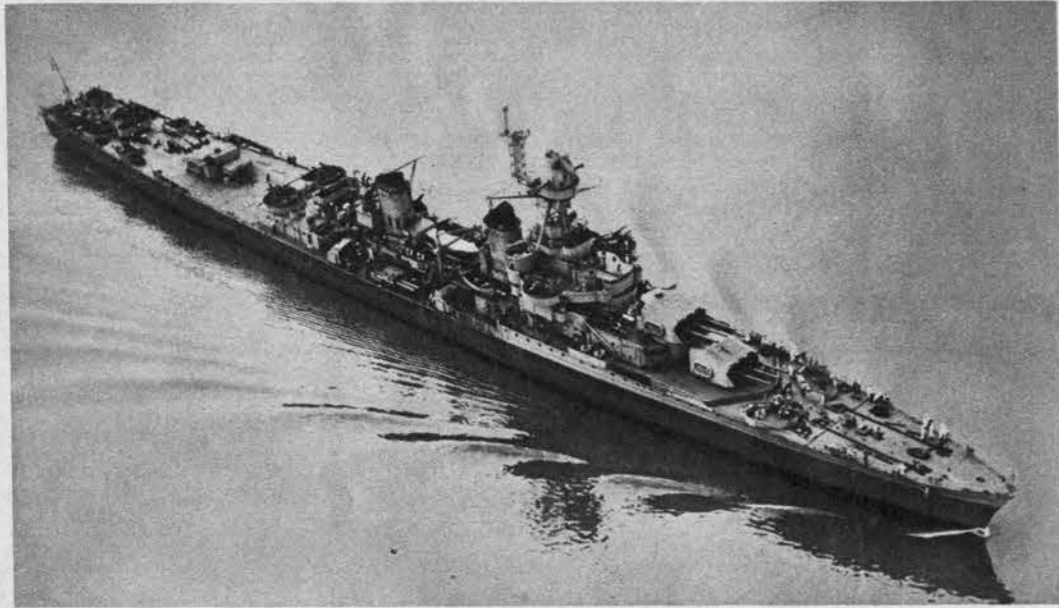


Three stacks irregularly spaced, one abaft the mainmast, mark old cruiser Emerald. Built just after World War I, Emerald carries its 6-in. armament in single shield mounts, has low outline.

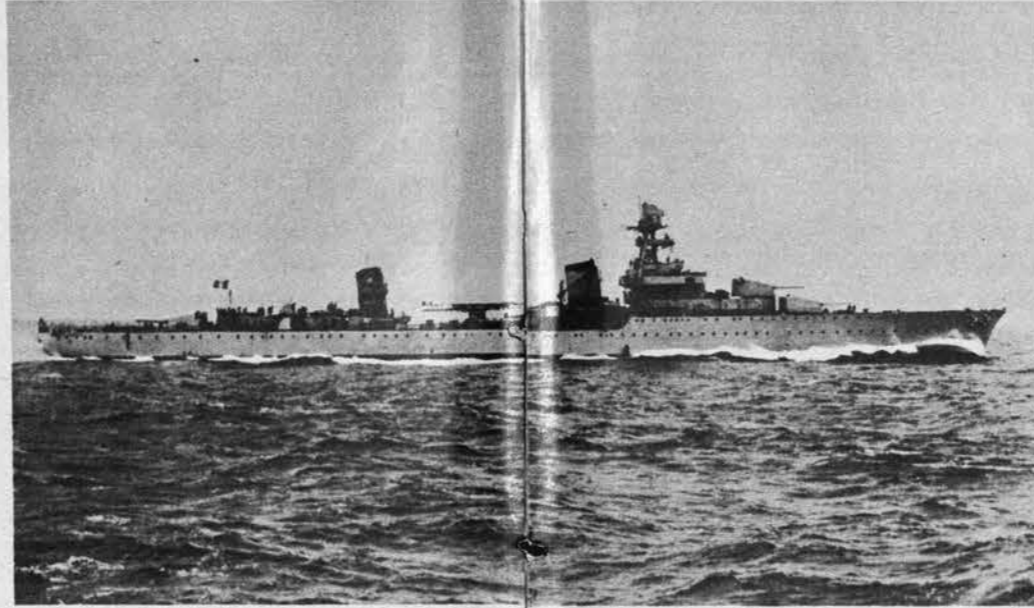


Light superstructure, closely spaced stacks of unequal width, and single shield gun mounts are typical of the four British World War I cruiser classes—Dragon, Caledon, Ceres and Carlisle.

FRENCH CL'S SUPPORTED LANDINGS ON EUROPEAN COASTS; NETHERLANDERS ARE UNIQUE; JAPS HAVE SUFFERED HEAVILY



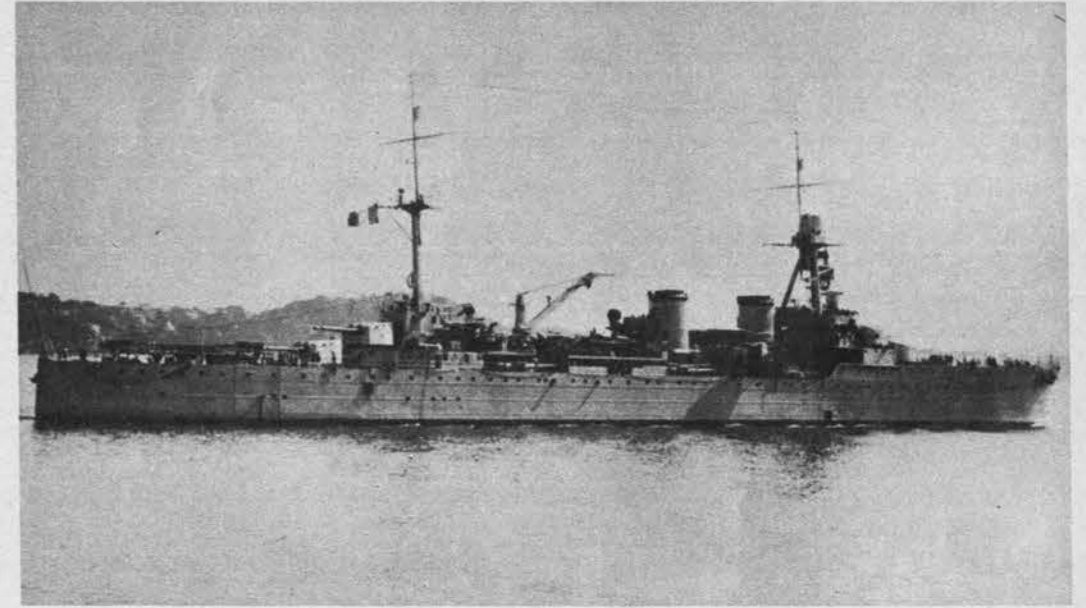
La Galissonnière Class cruisers are long and graceful with a widely spaced superstructure. Nine 6-in. guns are carried in two compact triple turrets forward and one aft. Note the transom stern.



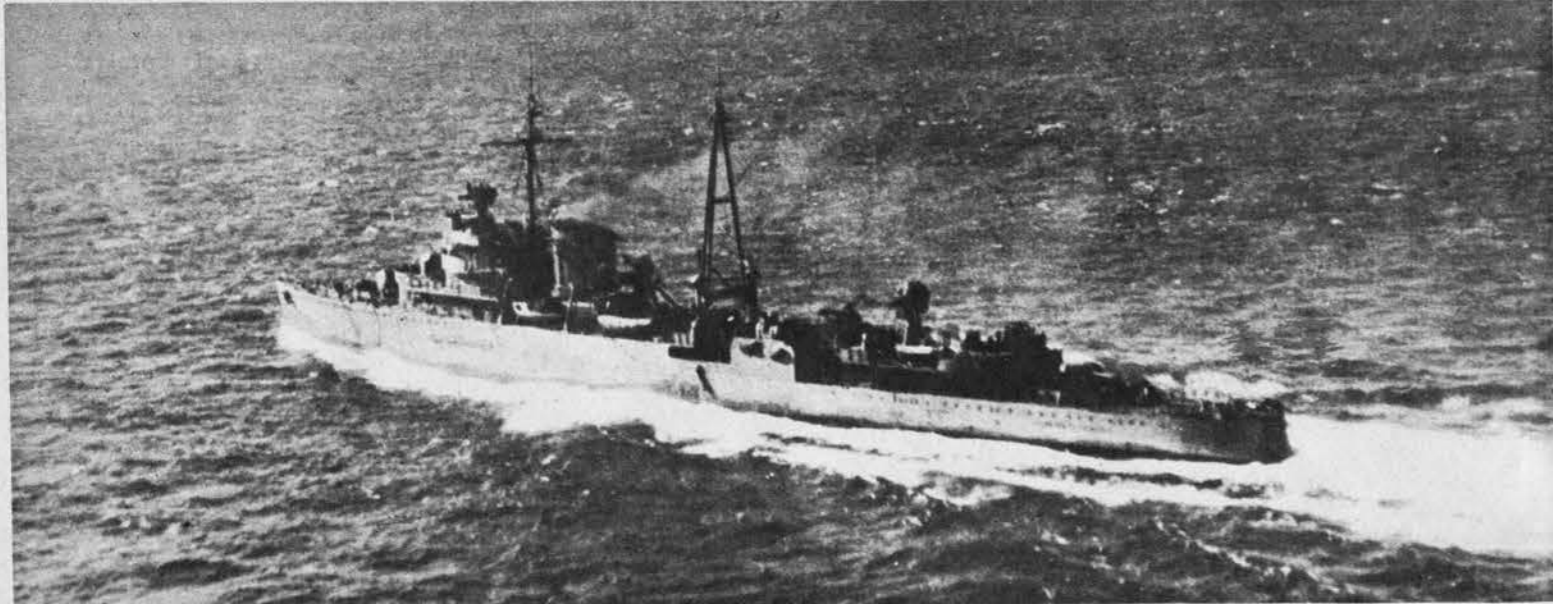
Emile Bertin is characteristically French, has low, even outline, short stacks, squat tripod



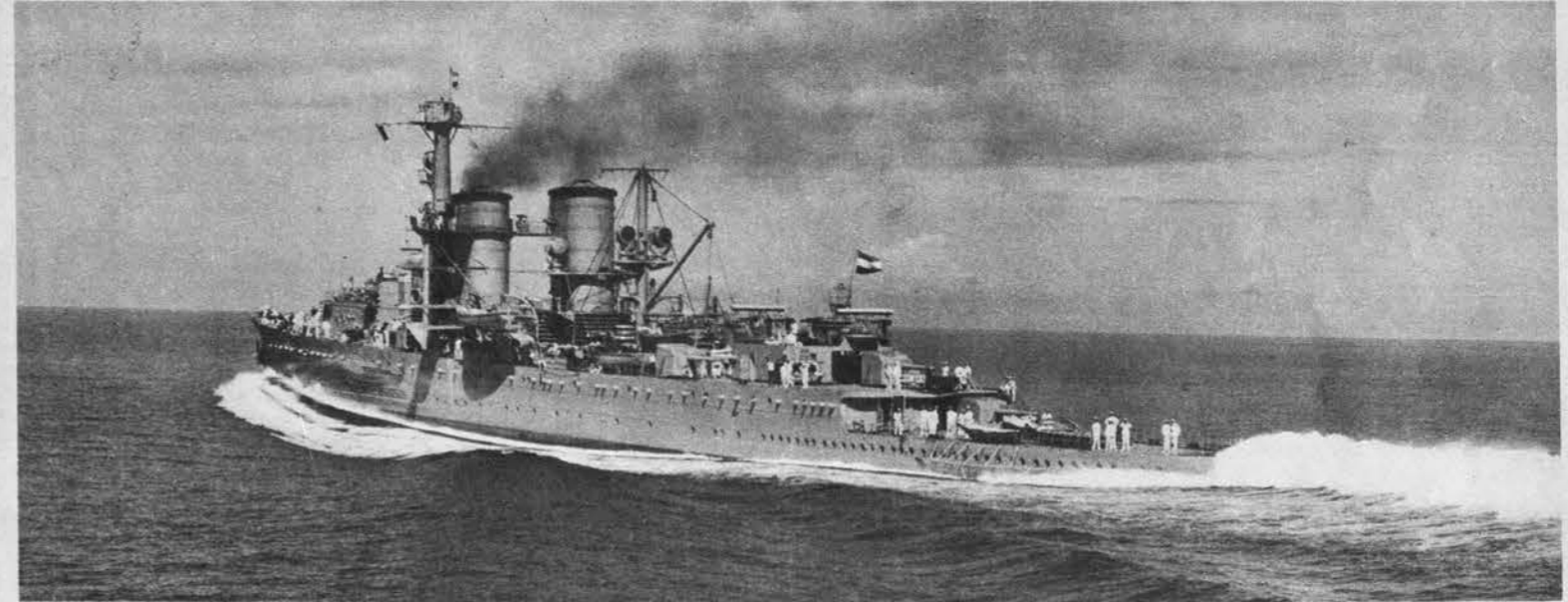
foremast. Searchlight platforms flank after stack. The Bertin is equipped for minelaying.



Duguay-Trouin has high freeboard, compact superstructure with low stacks close to bridge. One unit of class has no mainmast. Eight 6.1-in. guns are carried in two twin turrets forward, two aft.



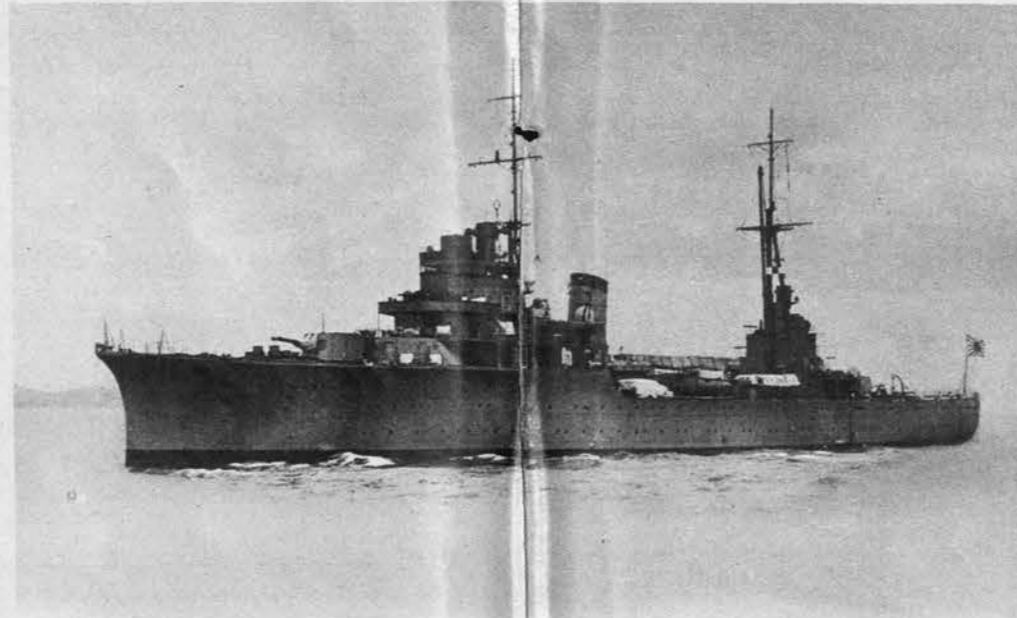
Small Netherlands CL Heemskerck displaces only 3,350 tons, carries eight 4-in. antiaircraft guns in twin shields. Sistership Tromp has six 5.9-in. guns in two turrets forward and one aft. Single broad stack and bridge are set well forward, giving stubby appearance about the bow.



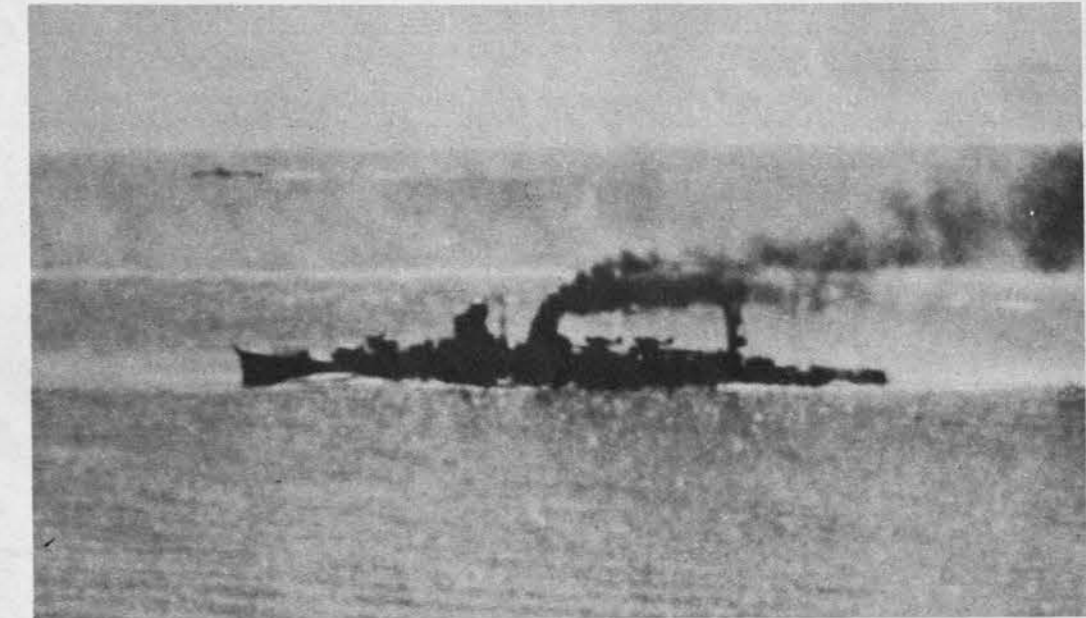
Old Netherlands CL Sumatra was built in 1916-25, looks German. Two tall, broad stacks and heavy pole foremast break its otherwise low outline. It has very low bridge and little superstructure aft. Ten 5.9-in. guns are mounted in single shields forward, aft and on the broadside.



Burning Natori Class ship has broken deck, three stacks, and single shield mounts typical of the older Japanese light cruisers. Kuma Class is similar in general appearance, but with lower bridge.

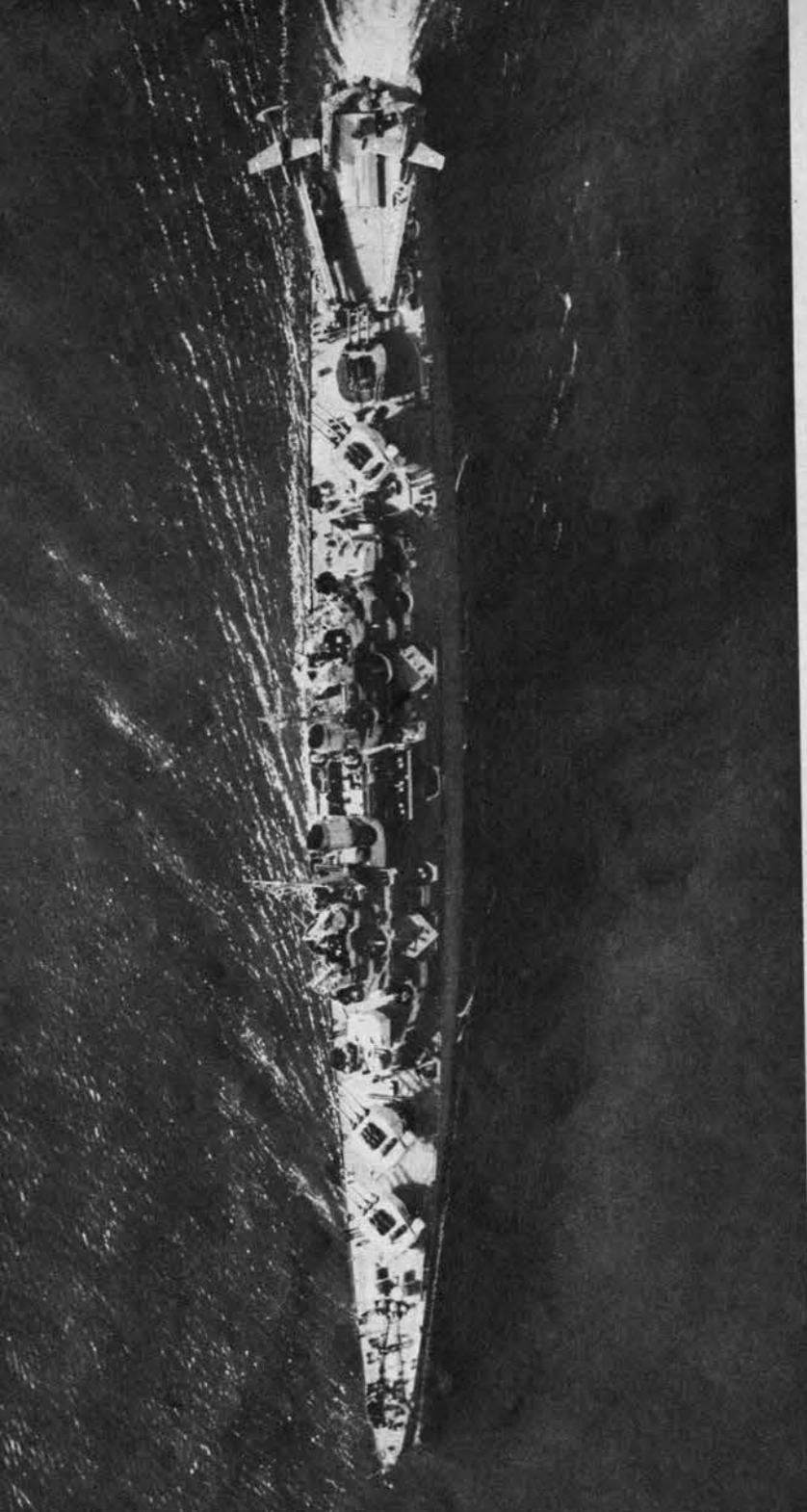


Training cruisers, Japanese Katoris are too slow to be effective combat cruisers. High freeboard, raked stack and conventional superstructure elements give them a lofty profile.

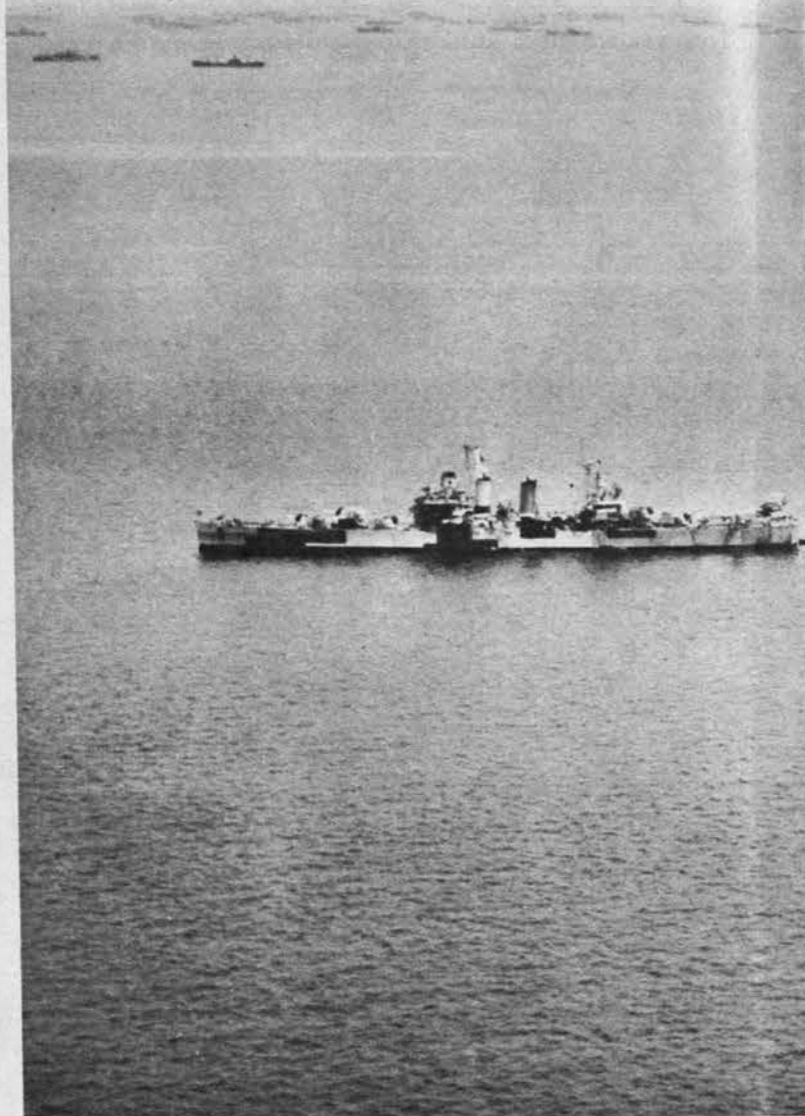


Modern Japanese CL is the Agano. It has a raked single stack, large aircraft stowage deck and tall vertical bridge. The position of the mainmast is distinctive. Armament is light—six 6.1-in. guns.

U.S. NAVY BUILDS LARGE CL'S FOR MORE EFFECTIVE LONG-RANGE OPERATION IN PACIFIC WATERS



Aerial view shows six twin turrets of 5-in. DP guns nestled in the Cleveland's superstructure. Note tapered bow, rounded transom stern.



Backbone of U. S. CL fleet is represented by these three cruisers at anchor in a Pacific harbor. At the left is a Brooklyn, in the background



a Cleveland, and at the right the St. Louis. Last of the Brooklyn Class cruisers to be completed, the St. Louis has a concentrated superstruc-

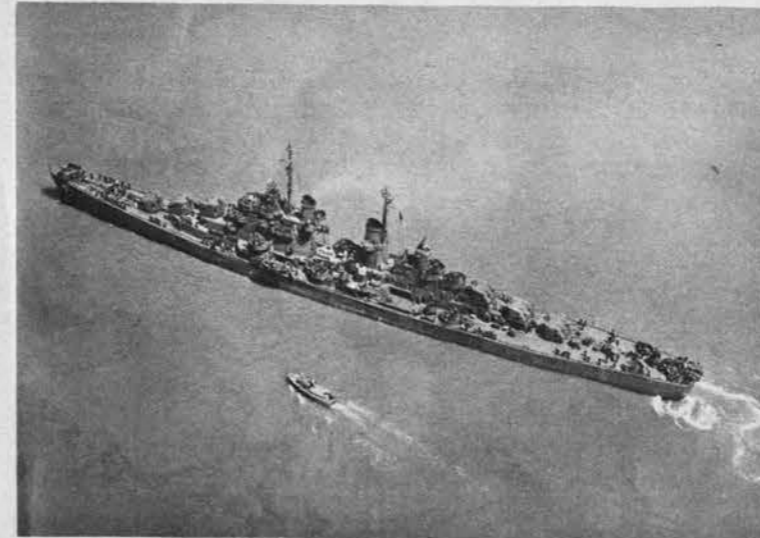
ture which forecast Cleveland design and retained the Brooklyns' 15-gun battery. Later Clevelands discarded one turret for increased AA.



Symmetrical profile of Cleveland's closely spaced stacks, prominent superstructure elements and pole masts show in foreshortened view.



Heavily armed Brooklyns were U. S. answer to Jap Mogamis, have five turrets. Note separated superstructure, stacks set close to bridge.

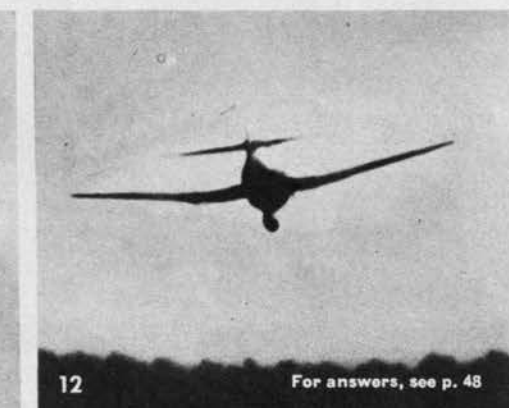
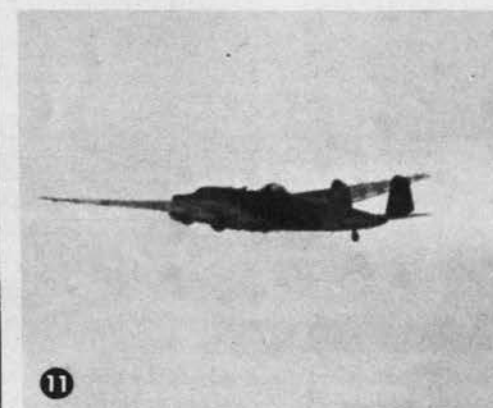
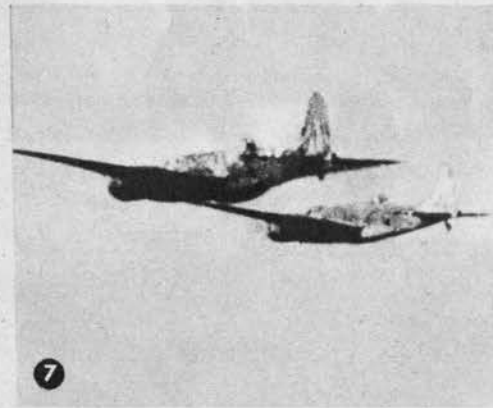
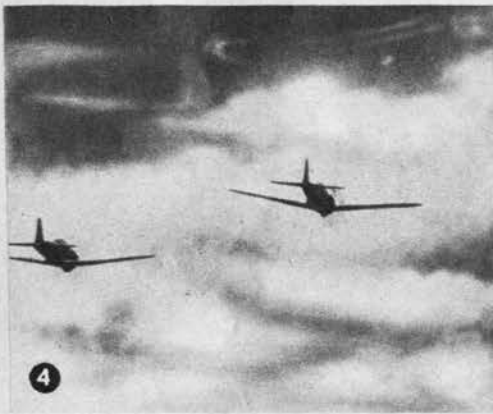
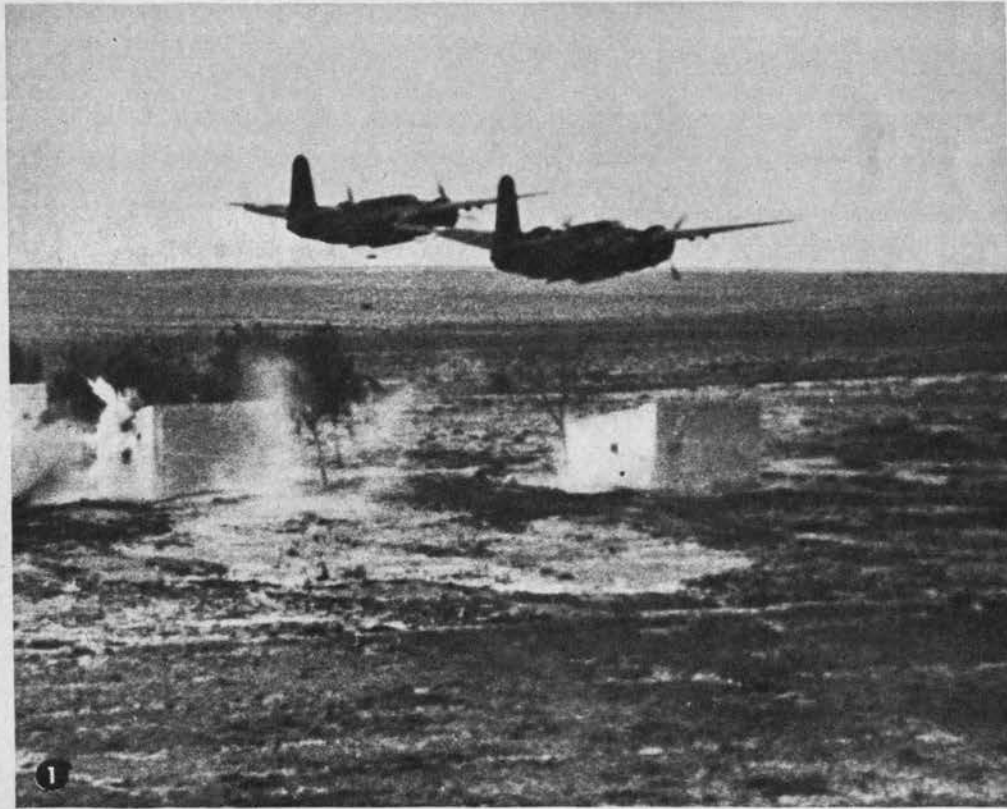


Five-inch DP guns of U. S. S. Oakland are mounted in symmetrical triple tiers. The Atlantas have two wing mounts aft of the second stack.



Four stacks rise between dispersed superstructure groups of Omahas, oldest U. S. CL's. Guns are carried in casemats and two turrets.

QUIZ NO. 2: REAR VIEWS OF AIRPLANES



For answers, see p. 48



P-47'S, TBF SHARE SAIPAN AIRPORT WITH ZEKE 52'S AWAITING SHIPMENT TO U.S. T.A.I. CREWS FOUGHT HARD TO PROTECT ZEKES FROM JAPS

JAP AIRPLANES

NEW MODELS WILL PRESENT A CHALLENGE

The Allies are driving deeper into the Japanese defense system without waiting for the end of the European war. Both the United States and Great Britain are continually sending more equipment into Pacific theaters of war and, as Allied power sweeps along the islands of the Empire, greater and more varied Japanese air power is rising to meet it.

The increased tempo of the war against Japan will bring with it an immediate need for extremely keen and alert recognition. Some new U.S. planes can be expected; British planes, both old and new, are likely to enter certain Pacific areas for the first time. But even more significant is the fact that the Japanese are known to be developing enough airplanes, as yet unseen, to constitute an entire new air force complete except for heavy bombers. As far as is known, these unspotted planes break down as follows: eight fighters, two float planes, two reconnaissance-bomber types and one carrier-based torpedo bomber.

In addition to producing new de-

signs, the Japanese have succeeded in stepping up the power of their engines. Jack's is rated at 1,875 hp., Myrt's at 1,850. The result should be fierce opposition to our growing offensive by faster, more maneuverable and more heavily armed airplanes than anything Japanese the Allies have yet faced.

To forestall being swamped, in a recognition sense, by a flood of new Japanese airplanes, an extremely alert watch must be kept for all variations from the known types. To facilitate the study of Japan's air power, the *Journal* is presenting in this issue the latest and best pictures of Japanese airplanes. A number of bomber-vs.-bomber encounters and our conquest of Saipan have given us some of the clearest views yet obtained in the Pacific. New material from the field will be printed as soon as possible. But in the meantime U.S. air and AA crews must become expert in recognizing the Japanese planes now operating. Only in this way will the new enemy weapons be spotted and reported in time to be of value to our military intelligence.



ZEKES ON DECK of U.S. CVL show shortened wingspan and blunt, rounded tips of Model 52.

JAPANESE AIRCRAFT

PRINCIPAL ARMY & NAVY TYPES

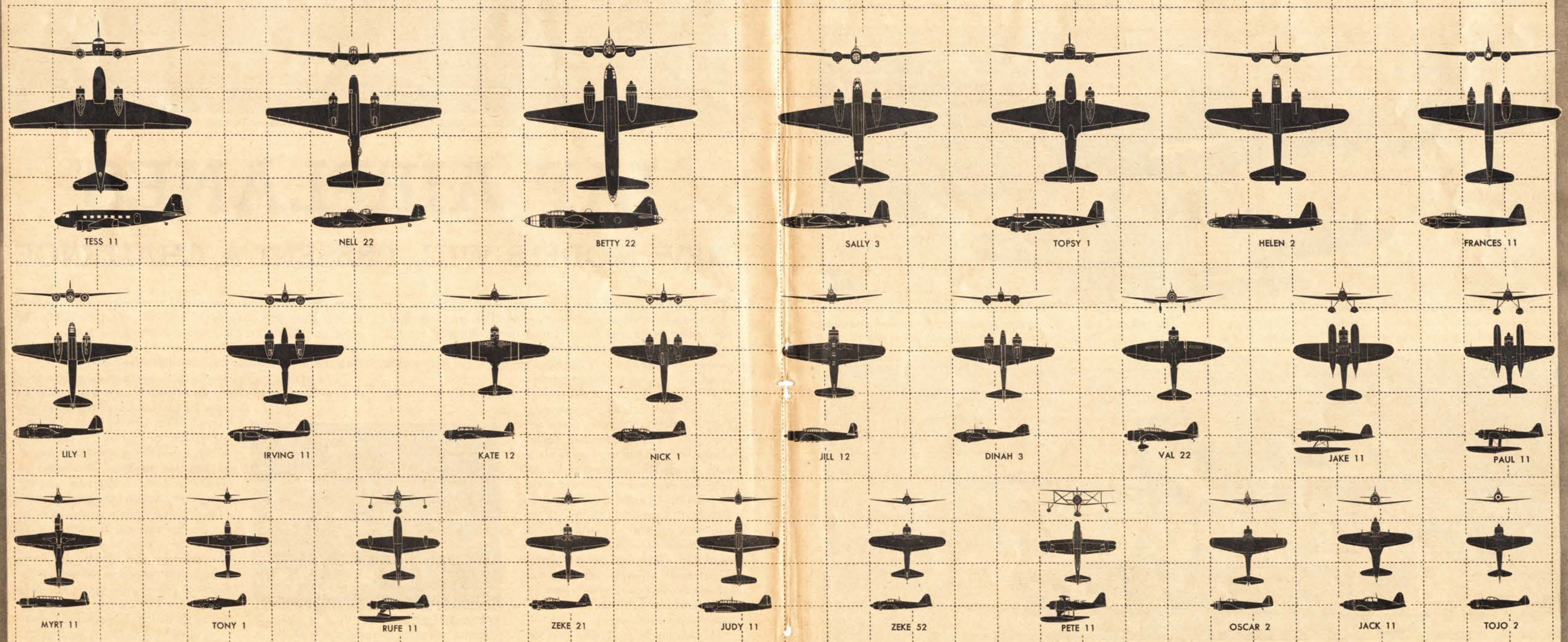
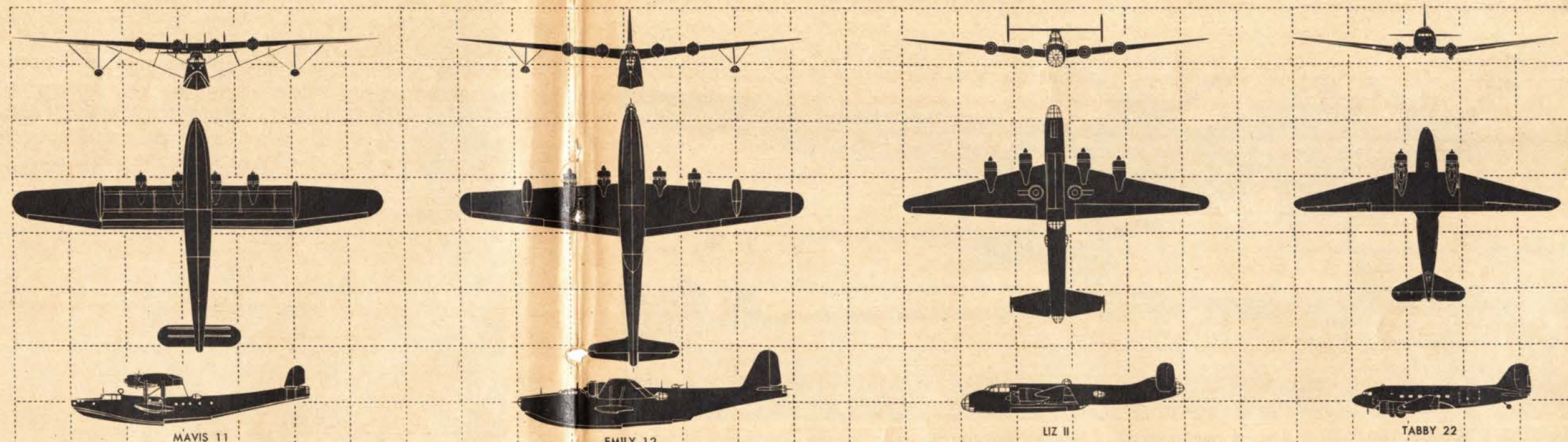
RESTRICTED

Here is a silhouette line-up of the 30 most important airplanes now in operation with the Japanese air forces. Code names followed by a single digit are Army; those followed by two are Navy.

Eight of these airplanes—Jill, Judy, Liz, Frances, Irving, Paul, Jack and Myrt—have come into operation since the beginning of the year. It seems quite likely that a number of newer planes, perhaps as many as 13, are in various stages of development. As well as producing new planes, the Japanese are also making more powerful engines such as Myrt's, which is rated at 1,850 hp.

It is imperative that these new planes be spotted and reported as soon as they appear. And only by knowing the existing types thoroughly can observers find the deviations which mark the new models.

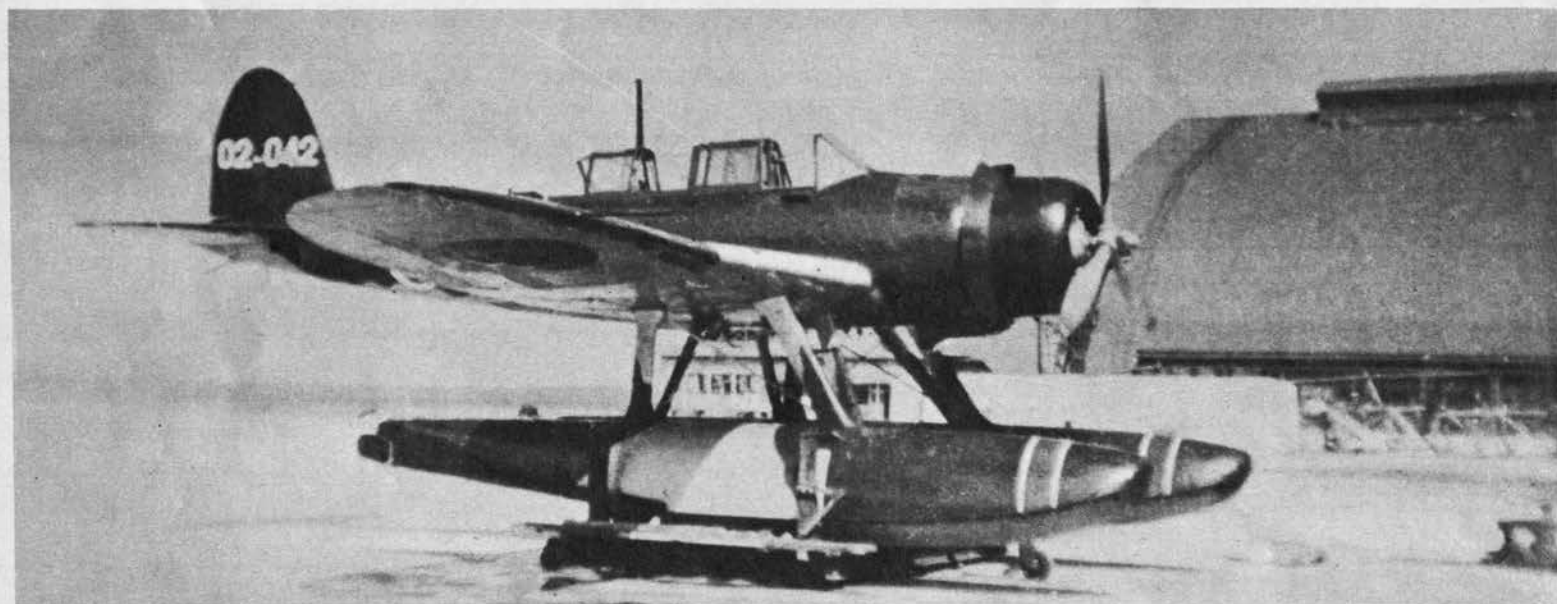
Scale: Each square equals 20 ft.





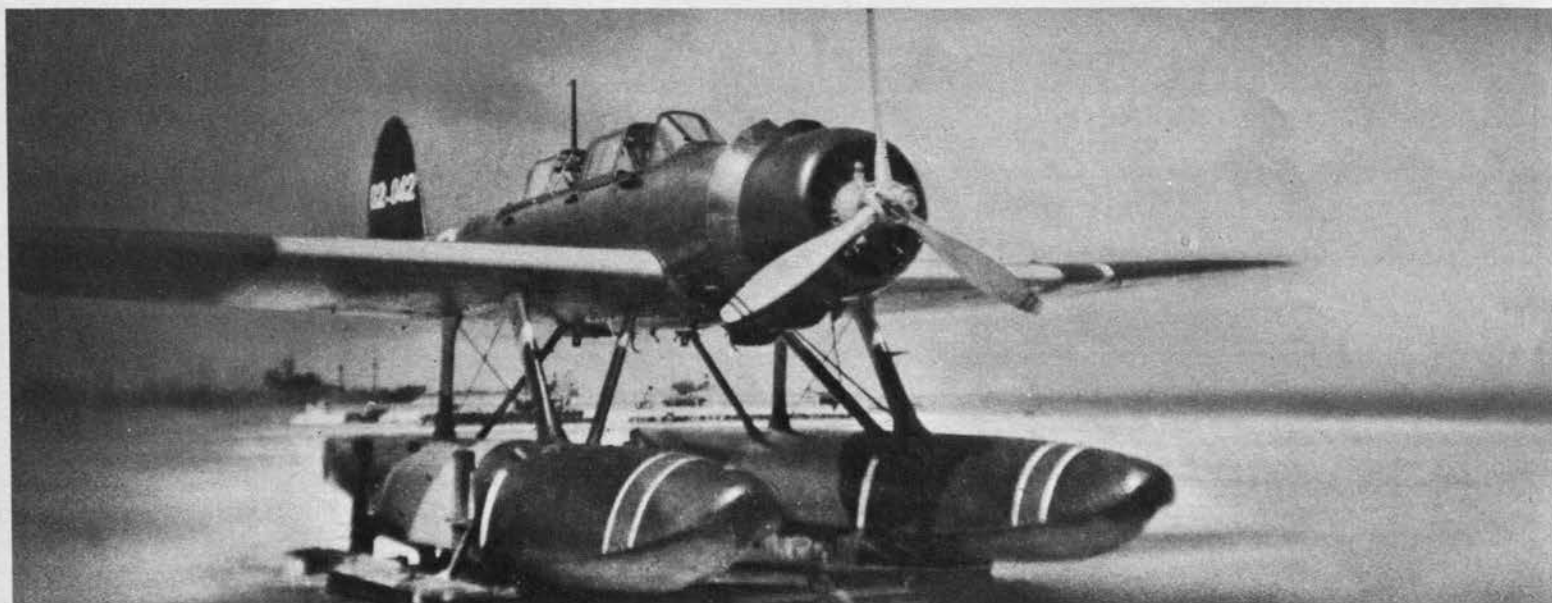
ALL-PURPOSE BOMBER FRANCES II is used in quantity against U. S. task forces. It compares with Nazi Ju-88 in size and versatility.

Note underslung nacelles on the midwing. Increased dihedral far outboard of the nacelles is exceptional in Japanese twin-engine design.



JAKE II (above and below) shows prominent, raised cockpit canopy, increased dihedral on wing's outer panels (as in Frances) and twin floats.

Jake and Paul (see pp. 26, 27) are the only twin-float planes operating in the Pacific. The wing's leading edge is straight, trailing edge curved.





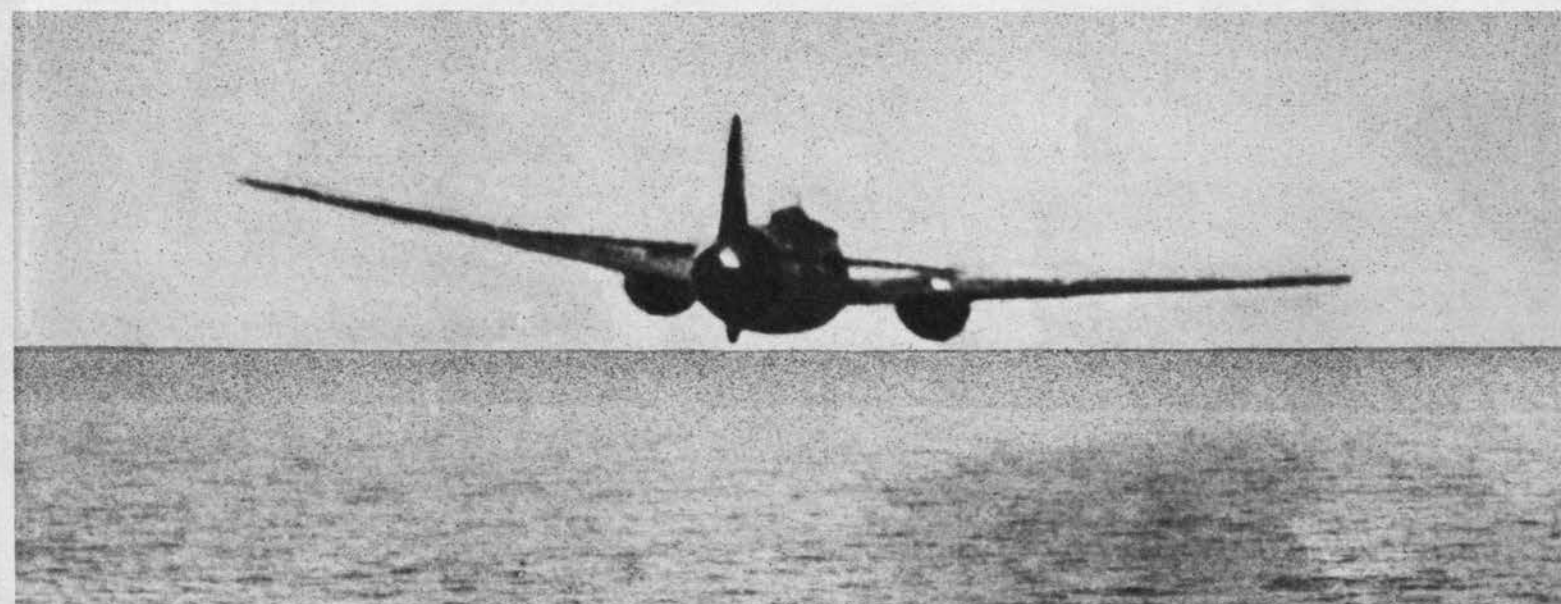
SIZE AND WING POSITION help distinguish Irving 11 from Frances (*opposite*) with which it has been confused. Irving's wingspan is

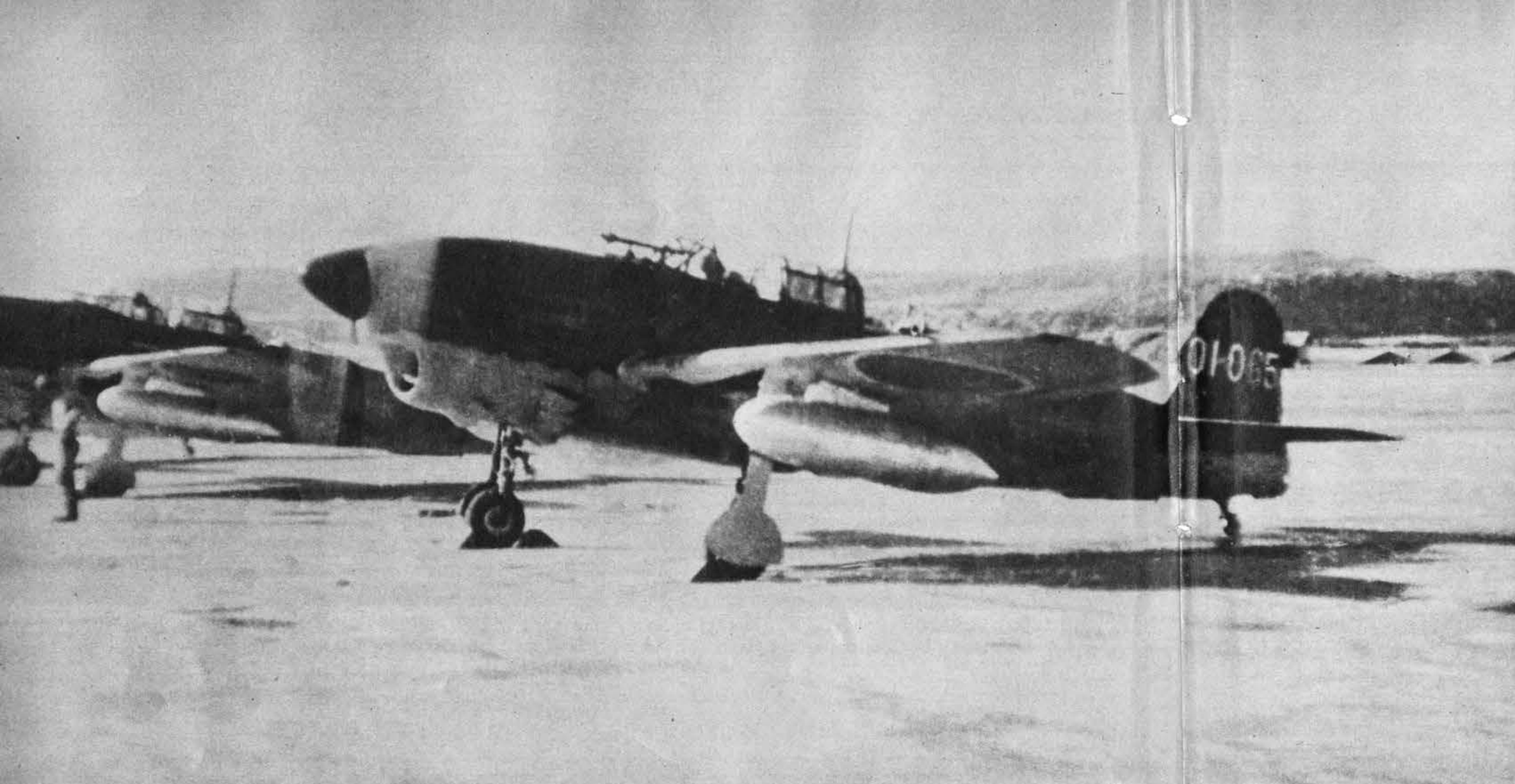
10 ft. less than Frances'; the wing is set low, with sharp dihedral stemming from roots. Irving is one of the most important Jap nightfighters.



BETTY 22 retains the basic features of the older model despite recent changes. Note the same thick fuselage, the rounded tail (*below*) and the

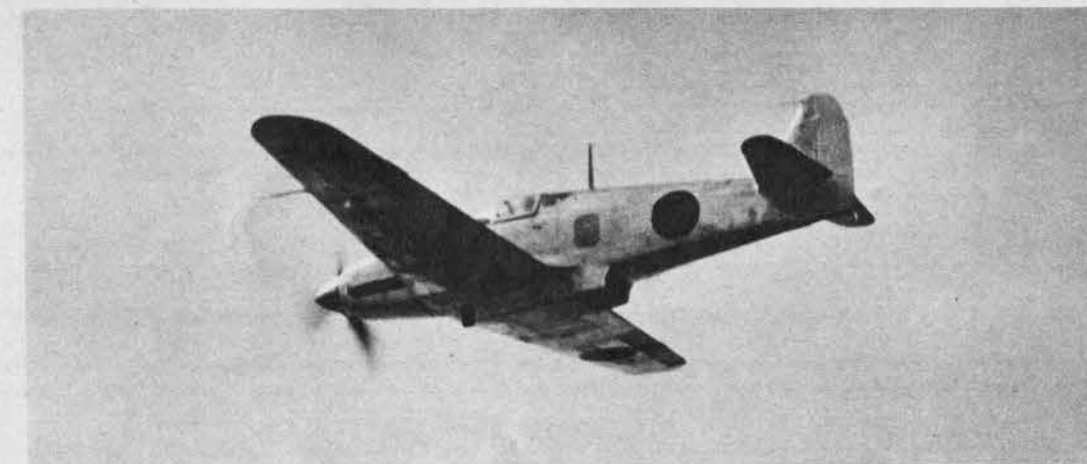
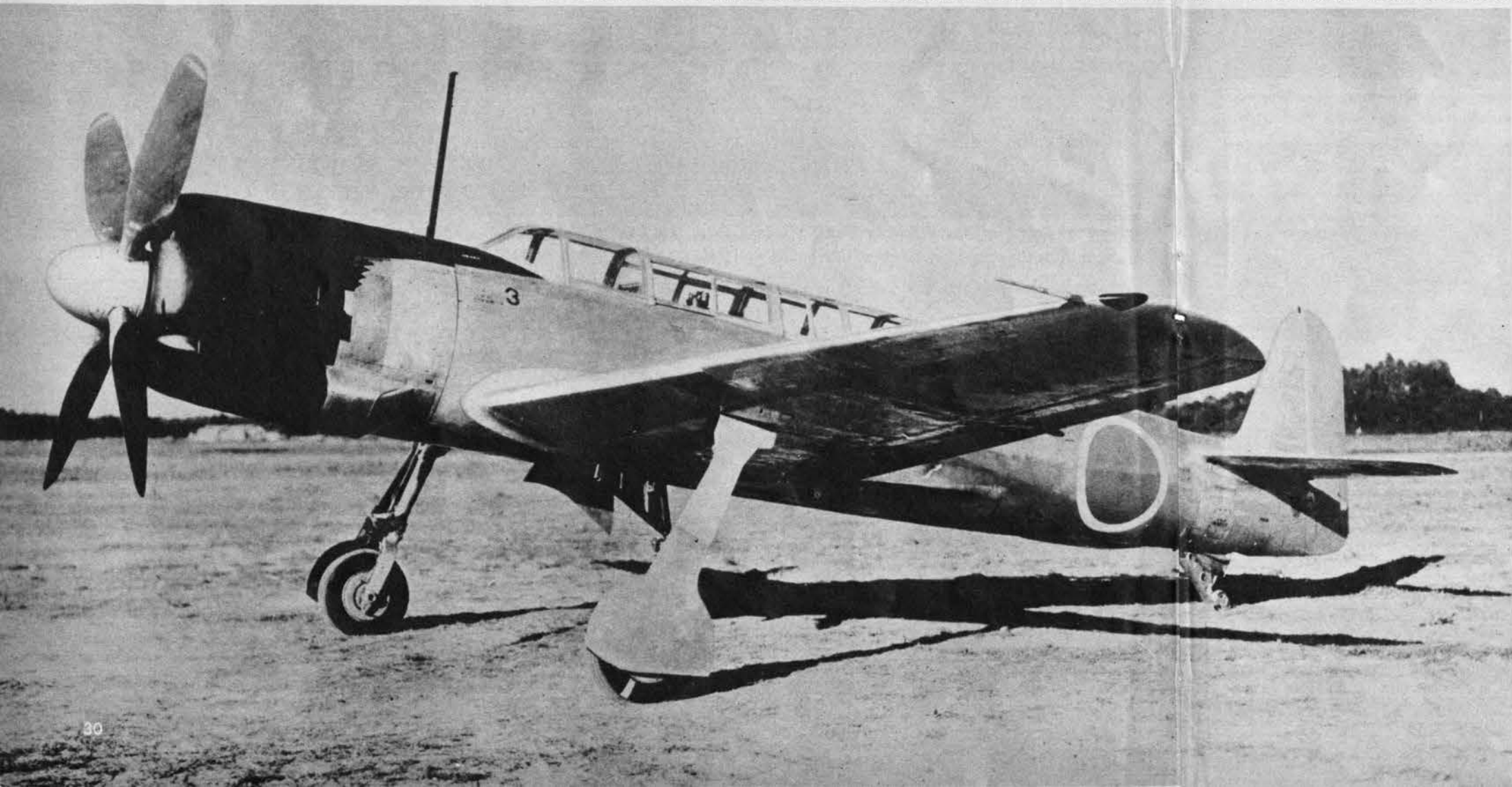
graceful dihedral of the large wing. The new Bettys have rounded wing and tailplane tips and a dorsal turret over the trailing edge of the wing.





LONG NOSE WITH INLINE ENGINE, DEEP RADIATOR ARE CHIEF RECOGNITION FEATURES ON JUDY, CARRIER-BASED DIVEBOMBER AND RECCO PLANE. IT MAY BE REPLACEMENT FOR DIVEBOMBER VAL.

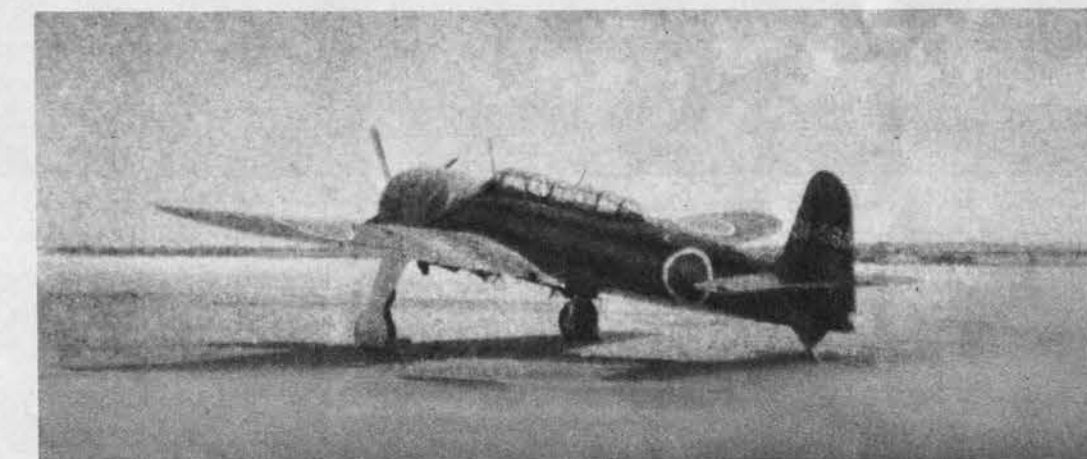
MYRT II IS AN EXAMPLE OF JAPANESE SPECIALIZATION IN HIGH-PERFORMANCE RECCO PLANES. THE FOUR-BLADED PROPELLER IS DRIVEN BY AN 1,850-HP. ENGINE. MYRT'S TOP SPEED IS OVER 375 M.P.H.



TONY I is Japan's only operational fighter equipped with an inline engine, although another is being developed. Not so maneuverable as Oscar or Tojo, it is probably least-used Japanese Army fighter.



BULLET NOSE and faired cockpit distinguish Tony from Judy (top left). Other important features are the humped fuselage, the prominent belly radiator and the rudder's almost vertical trailing edge.



CHIEF TORPEDO PLANE operating from Japanese CV's is Jill 12. The original engine has been replaced but the four-bladed propeller retained. Jill's maximum speed is approximately 330 m.p.h.



DIHEDRAL from the wing roots on Jill 12 should prevent confusion with Kate 12. With their carrier fleet below full strength, the Japs have been using single-engine torpedo planes from land bases.



LI2 is the first four-engine land-based bomber the Japs have built. Believed unsuccessful as a bomber, it is now in production for trans-

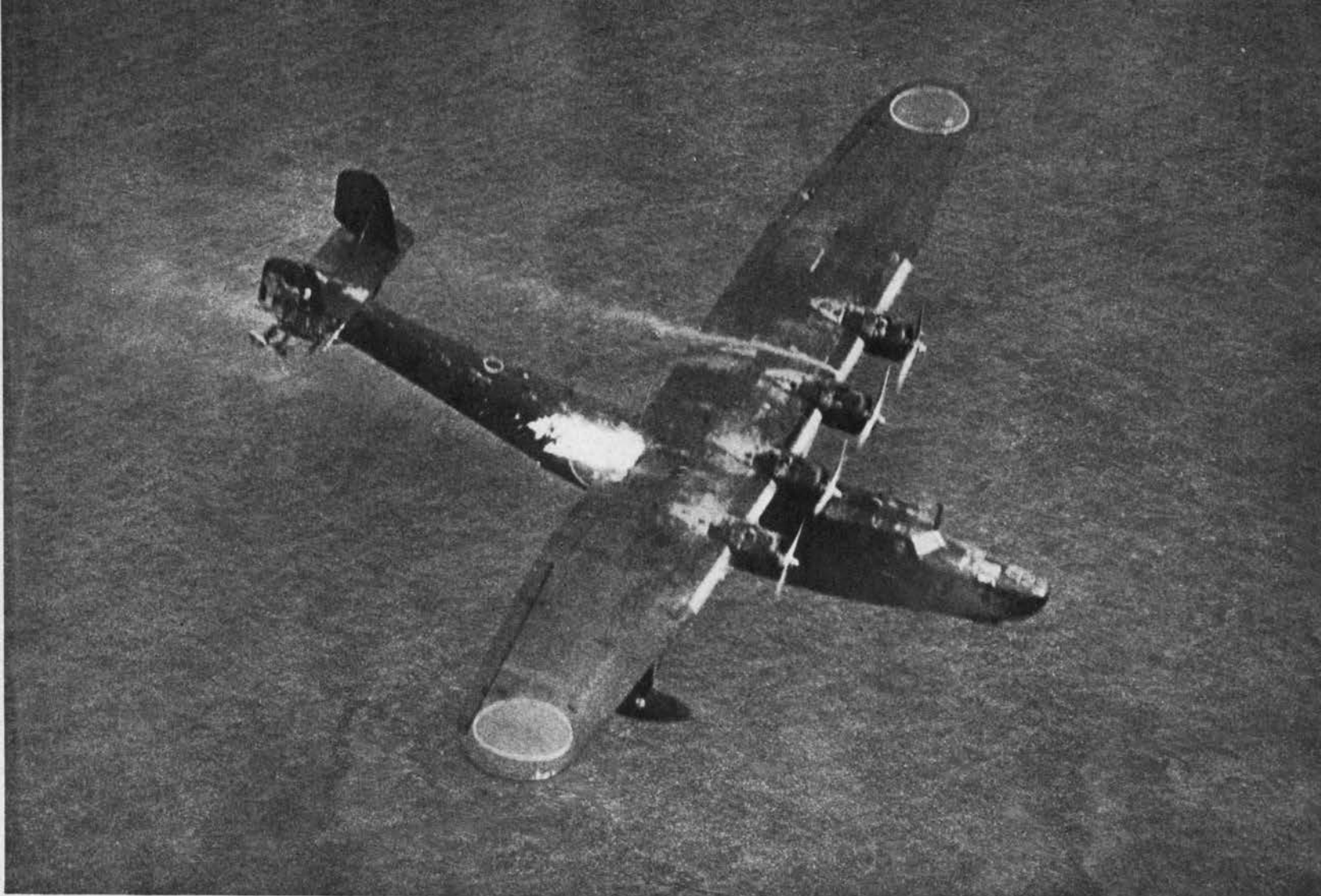
port use. The wing's tapered leading edge and the straight trailing edge show Douglas influence. The tailplane is set atop sharply upswept tail.



JAPANESE FLIERS pose in front of Tabby 22, a copy of our DC-3. Shipping losses force Japan to depend increasingly on air transport.



HEAVY SPINNERS and Jap markings alone distinguish Tabby from C-47. Chiefly a Navy plane, Tabby is also used by the Japanese Army.

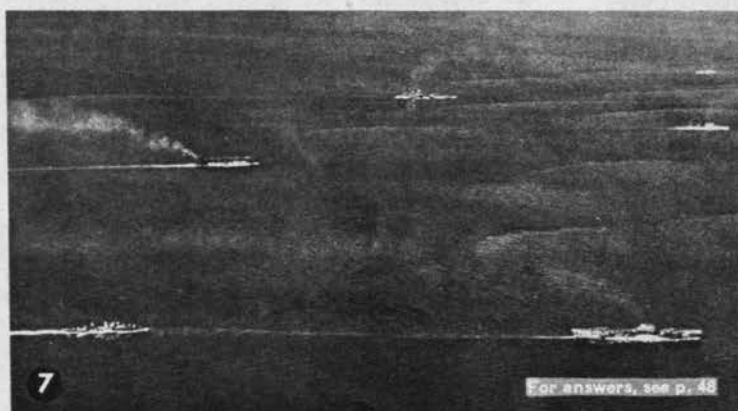
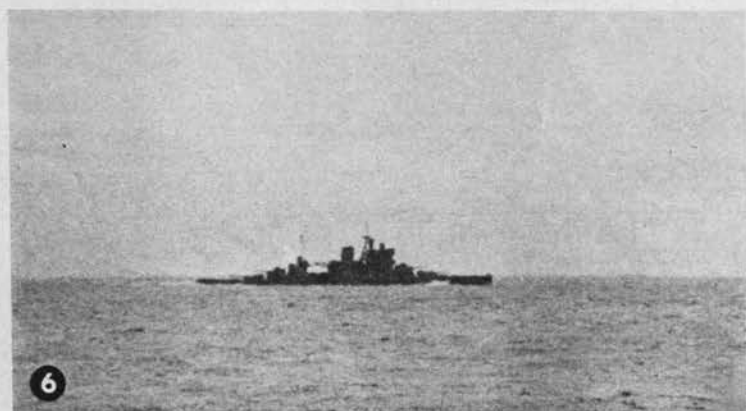
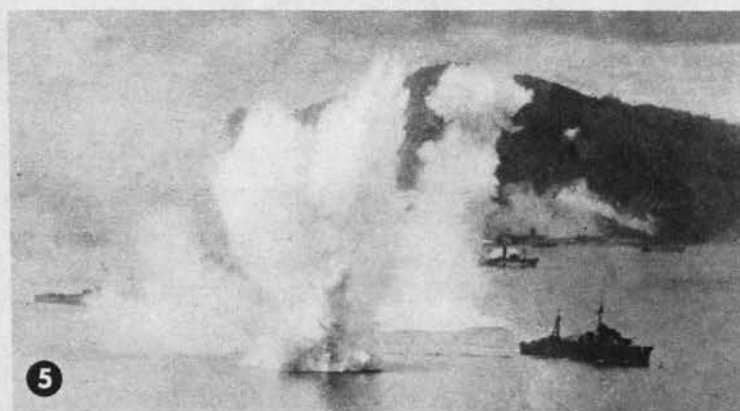
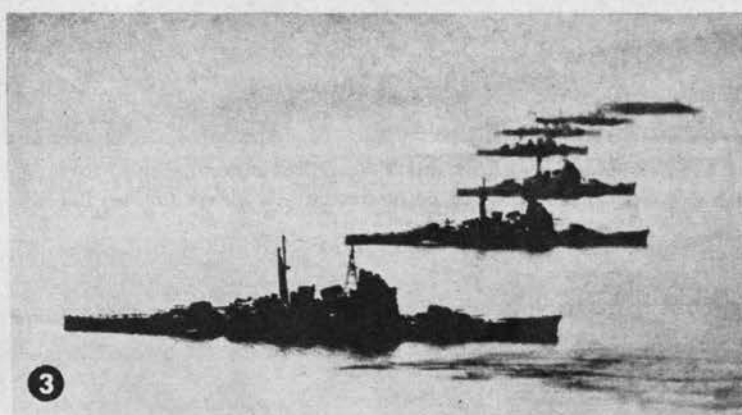


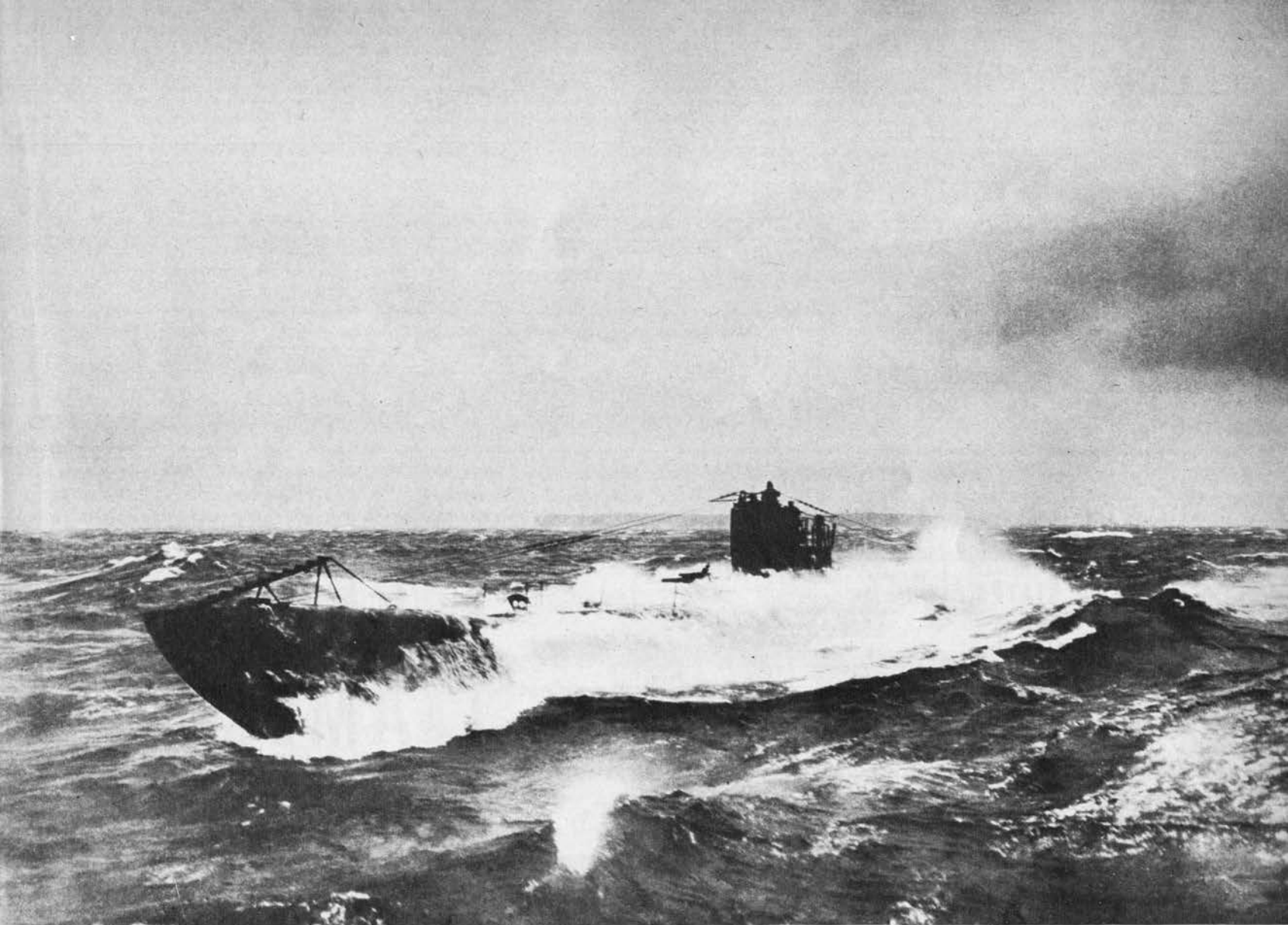
BIG FLYING BOATS still fly Jap Navy patrol missions and provide us with excellent pictures while being destroyed. Mavis (*above*) has a

twin tail assembly, parasol wing and long, thin nose. Emily (*below*) is a heavier shoulder-wing plane which resembles RAF's Sunderland.



QUIZ NO. 3: PACIFIC FRIEND AND FOE





BROACHING U-BOAT SHOWS TYPICAL GERMAN CONNING TOWER WITH PLUMB LEADING EDGE, STEP AFT. NET CUTTER IS NO LONGER FITTED

SUBMARINES WITHIN QUALIFIED LIMITS THEY FALL INTO NATIONAL PATTERNS

The toughest recognition problem of the air-sea war is growing daily more important. As Allied forces press into the restricted waters of the Japanese Empire the greatest co-ordination and co-operation between Allied planes and submarines become necessary. It is a matter of great concern to know not only where our submarines are operating, but also what the nationality of any sighted sub may be.

The toughness of the problem arises from the very nature of a submarine's style of warfare. Essentially, the sub is an offensive weapon. Its chief defense is invisibility and when threatened it can crash dive in a minute or less. The men in the approaching plane have only the briefest interval in which to determine the nationality of the submarine, to decide whether it is an enemy to be killed or a friend to be assisted.

However, numerous ways have been established to aid both the submarine and the plane in making themselves known. Proper briefing on submarine positions, bomb restriction areas and sanctuaries, proper use of identification and recognition signals, radio and radar, and mechanical aids all are designed to prevent tragic mistakes. In normal operations these methods have provided adequate protection. In areas of known Allied sub activity airmen have held their bombs; surfaced submarines have identified themselves at once. The few cases of misidentifica-

tion that have been reported have resulted from human fallibility, a condition no method or device can completely eliminate.

Despite these measures, however, a pilot still can find himself in a pickle—for example, he may sight a sub outside restricted areas but close to a friendly submarine position. The approach may be started, no identification signal seen, everything be legal for the drop—and yet enough friendly-enemy doubt may remain to spoil the attack. But there is an answer to this predicament. It is possible to determine the nationality of a surfaced submarine. As in other forms of naval construction, the architecture of a submarine shows definite national traits. A flier who is fully aware of them will be able to prevent tragedy or rack up a greater score of victories.

The *Journal* has made a preliminary attempt to itemize structural details which differentiate underseas craft. Each nation is represented by photographs and by beam silhouettes typical of the bulk of her underseas fleet. Considered most important for study at this time are the Balao Class (U. S.); Triton, 1940S and Unity Classes (British) and I-15, I-168 and RO-100 Classes (Japanese). Some of these classes are shown on the following six pages. Complete coverage of operational subs can be found in various ONI manuals. Enemy submarines are in ONI 220 (revised); U. S. subs in the ONI 54 Series; British craft in ONI 201S.



TALL HEAVY PERISCOPE SHEARS RISE LIKE STEEPLES FROM SQUAT MASS OF U. S. CONNING TOWER, DISTINGUISH OUR FLEET SUBS FROM ALL OTHERS

UNITED STATES



LOOK FOR: TALL HEAVY PERISCOPE SHEARS EXTENDING ABOVE THE CONNING TOWER, LOW SMALL CONNING TOWER WITH STEPS FORE AND AFT FOR AA GUNS, CONNING TOWER RISING FROM THE DECK WELL FORWARD OF AMIDSHIPS

BRITISH



LOOK FOR: PROMINENT GOAL-POST TYPE PERISCOPE SHEARS ON THE CONNING TOWER, GUNS MOUNTED FORWARD OF THE TOWER IN ENCLOSED SPLINTER SHIELD, DECK MUCH NARROWER THAN PRESSURE HULL WHEN SEEN FROM ABOVE, DECLINE BROKEN SHORT OF THE STERN, VISIBLE WHEN SUB IS SURFACED



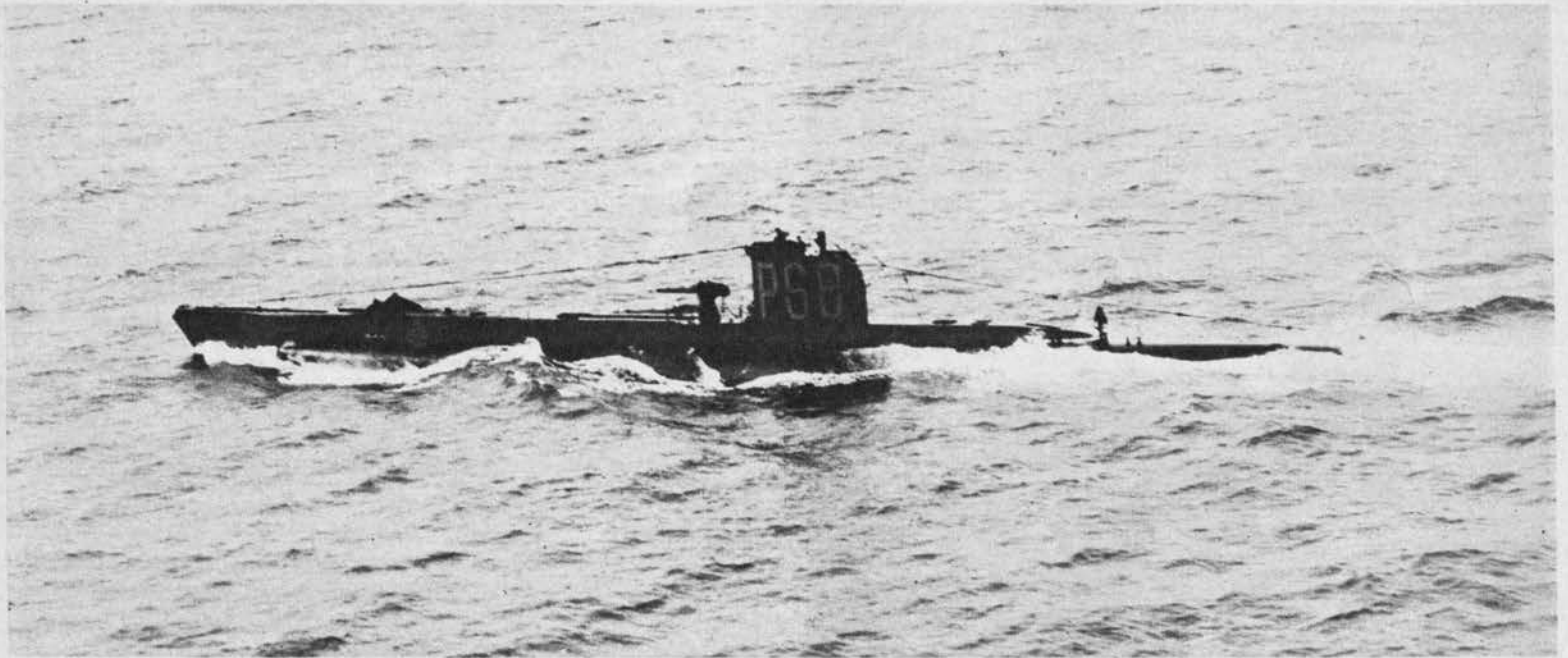
EXCEPTION: UNITY CLASS COASTAL SUBS DO NOT HAVE PROMINENT PERISCOPE SHEARS

BRITISH & AMERICAN

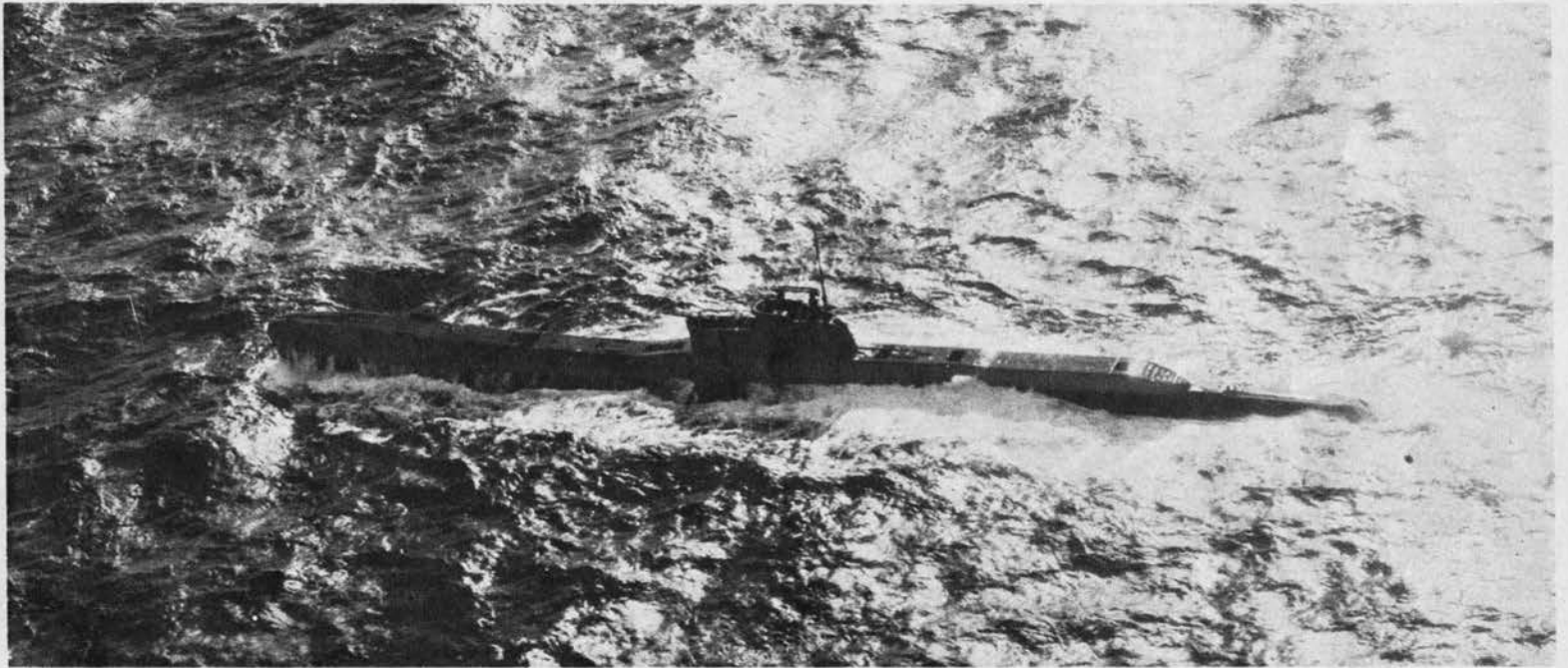
There is one sure-shot rule in submarine recognition—if the craft has heavy, conspicuous periscope shears (the supports which hold the ship's viewing apparatus) it is an Allied vessel. Fleet subs of both the British and American Navies are distinct from all others in this respect. On U. S. vessels the shears are tall and tapered and, until very recently, set close together. On British subsurface craft the shears form a gallows or goal post fore and aft on the conning tower. Unfortunately, the converse of the rule is not true. There are Allied submarines which do not have prominent shears, particularly the British coastal types of the Unity Class. For this reason it is necessary to be sure of the other points itemized under the typical silhouettes and shown in the accompanying photographs.

LOW, STEPPED CONNING TOWERS ARE SET WELL FORWARD ON HULLS OF U. S. SUBS. BRISTLE WITH PERISCOPE SHEARS, OTHER TECHNICAL EQUIPMENT

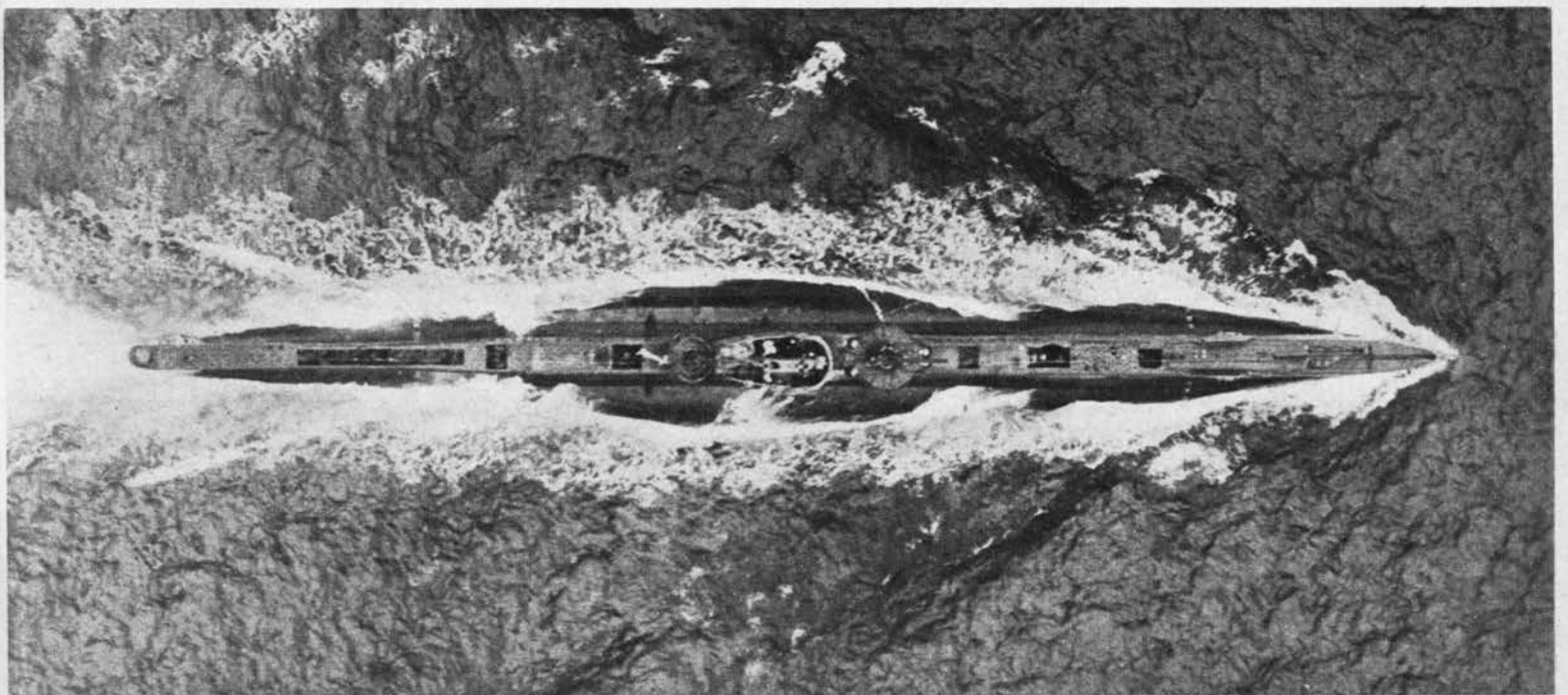




BRITISH UNITY CLASS COASTAL SUBS LACK HEAVY PERISCOPE SHEARS, BUT HAVE CHARACTERISTIC BREAK IN AFTER DECK (SEE PICTURES BELOW)



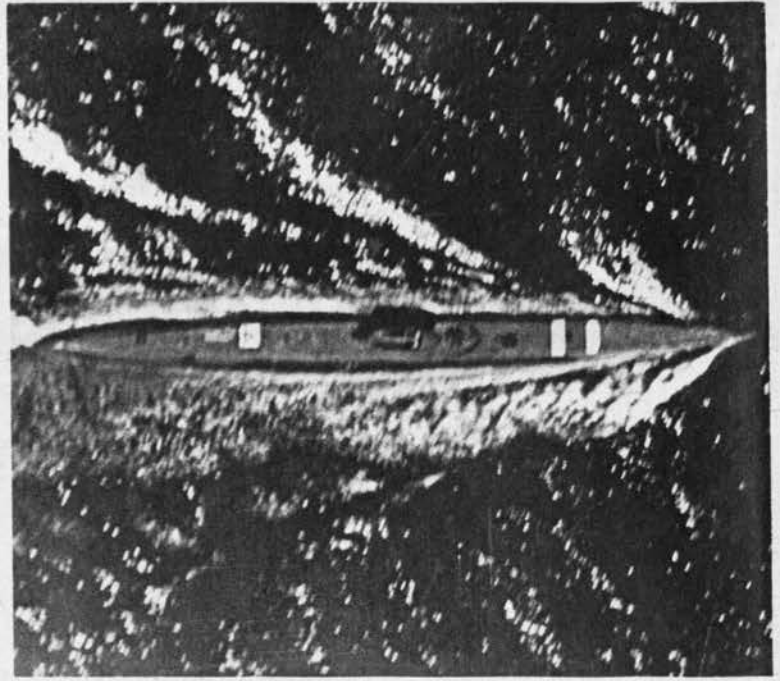
GOAL-POST SHEARS CROWN CONNING TOWER OF TRITON CLASS. GUN MOUNT FORWARD EXTENDS BRIDGE SUPERSTRUCTURE OF BRITISH FLEET SUBS



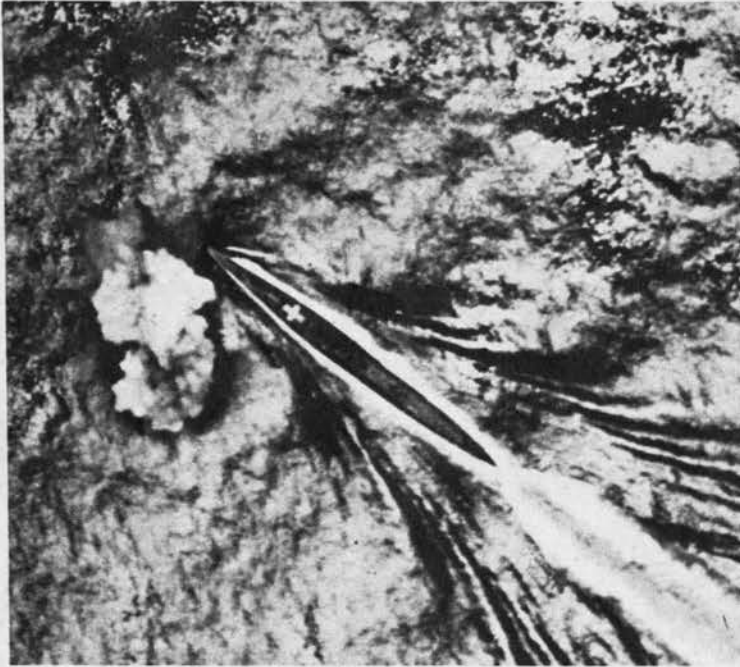
FROM ABOVE, DECK OF BRITISH SUB IS EXTREMELY NARROW, CONTRASTS SHARPLY WITH THE BROAD PRESSURE HULL. NOTE DECKLINE BREAK AFT



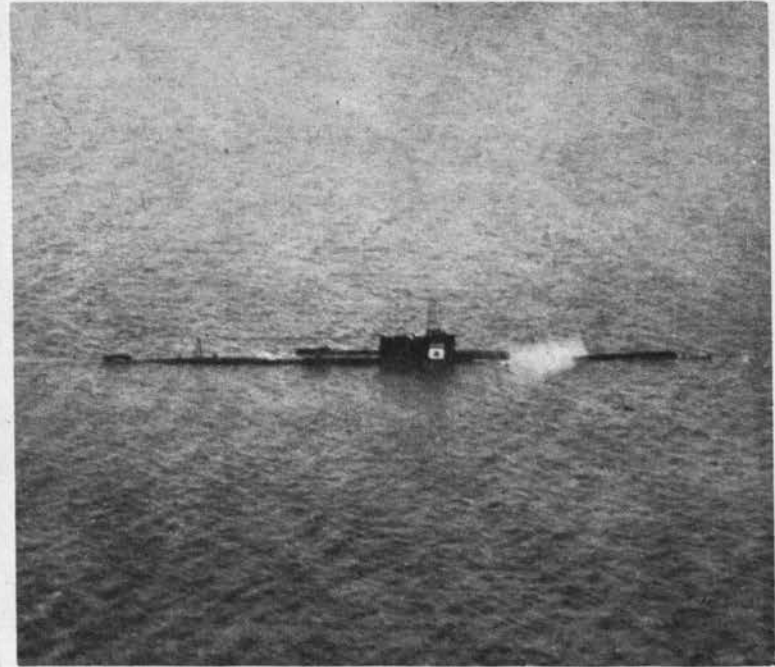
RO-100 CLASS COASTAL TYPE HAS TALL, BLOCKY TOWER SET AMIDSHIPS



WHITE STRIPES, TWO FORWARD, ONE AFT, ARE PECULIAR TO JAP SUBS



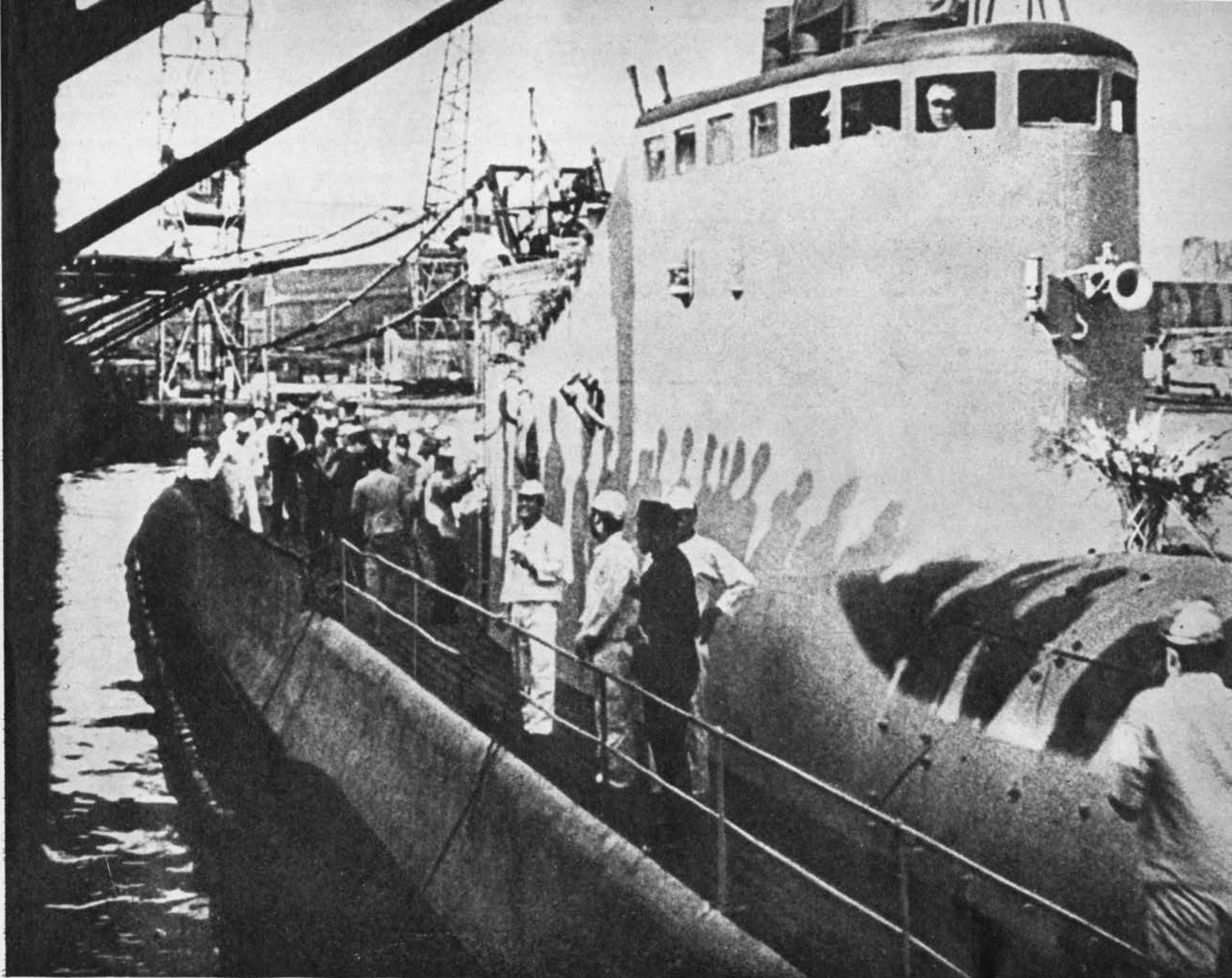
PAINTED WHITE CROSS IS ONE OF MANY FORMS OF JAP SUB MARKINGS



THIS JAP I-15 HAS BULKY TOWER, VERTICAL RUDDER AND RED MEATBALL



STANDARD JAPANESE FLEET SUBMARINE RESEMBLES THIS I-153 DESIGN. FORWARD BULGE ON CONNING TOWER, VERTICAL RUDDER ARE PROMINENT

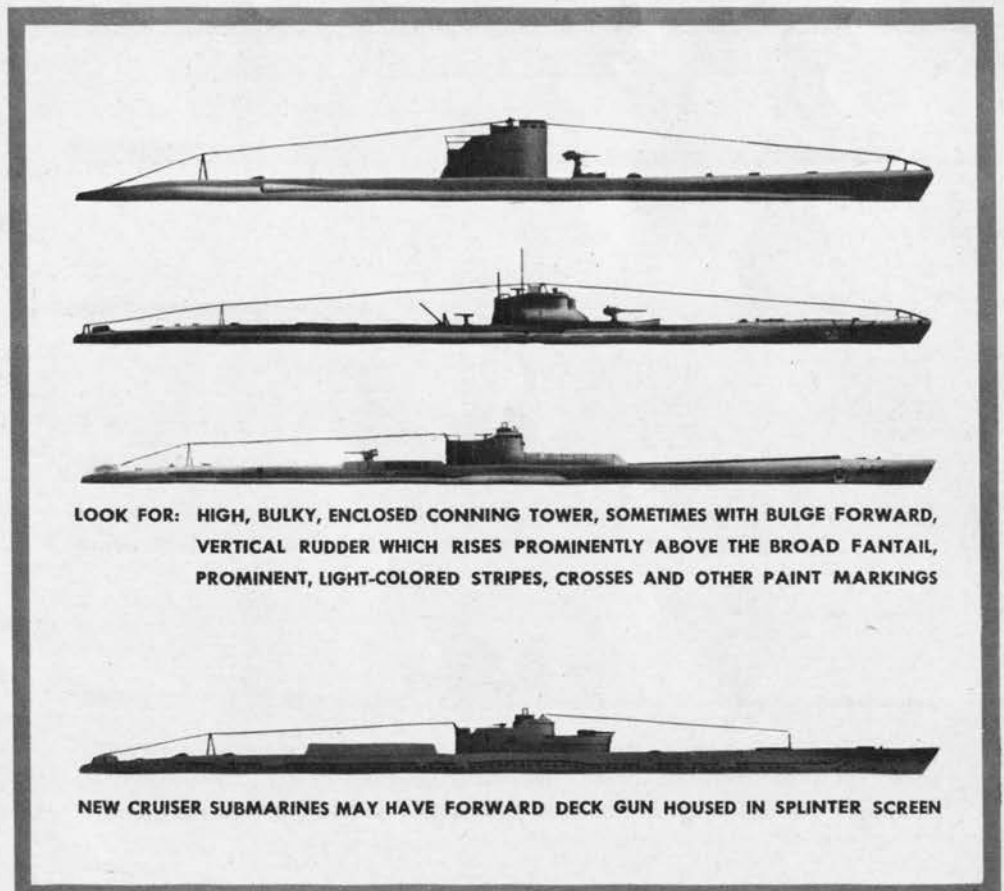


CONNING TOWER OF I-15 CLASS CRUISER SUB IS STREAMLINED; BRIDGE IS FULLY ENCLOSED. BULGE FORWARD OF TOWER IS FEATURE OF MANY JAPS

JAPANESE SUBMARINES

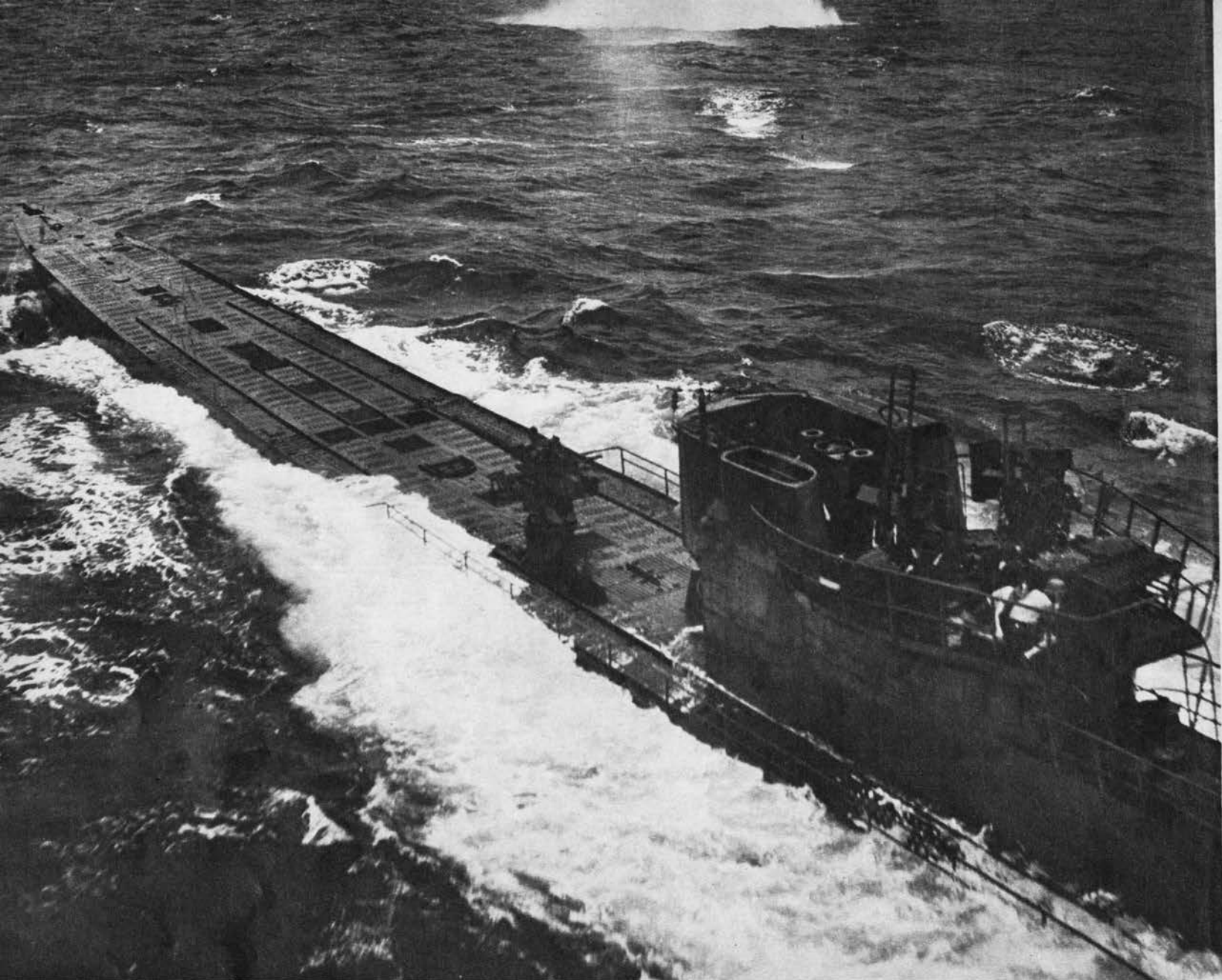
Our Pacific enemy entered the war with a large and active submarine fleet which achieved considerable success in the early days. But as British and U. S. patrols spread out, they made undersea attack more hazardous. Now, however, we are moving deeper into Imperial waters and clashes with Japan's undersea fleet will be more frequent.

Though the major types of Japanese subs differ among themselves, they have many points in common which distinguish them from U. S. and British designs. Most important of these are the bulky conning towers with a bulge forward, and rudders which project above the fantail. Important also are the varied paint schemes which the Japanese have devised as partial solution to their own submarine recognition problem.

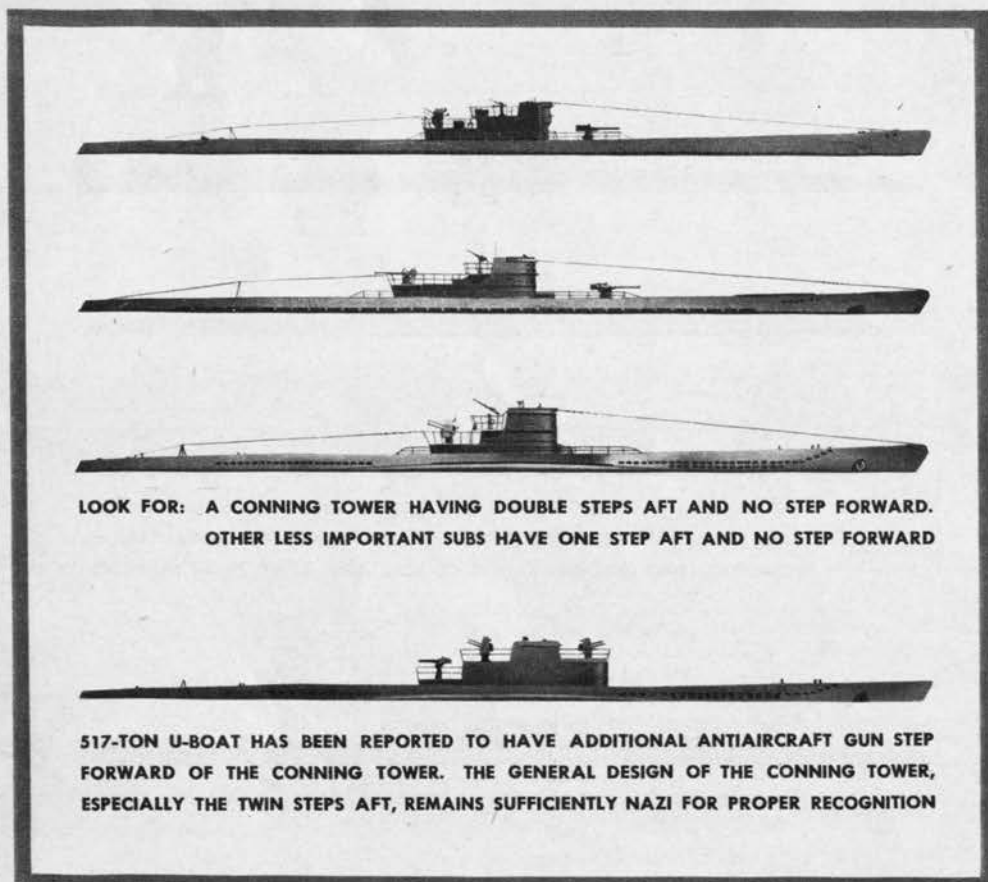


LOOK FOR: HIGH, BULKY, ENCLOSED CONNING TOWER, SOMETIMES WITH BULGE FORWARD, VERTICAL RUDDER WHICH RISES PROMINENTLY ABOVE THE BROAD FANTAIL, PROMINENT, LIGHT-COLORED STRIPES, CROSSES AND OTHER PAINT MARKINGS

NEW CRUISER SUBMARINES MAY HAVE FORWARD DECK GUN HOUSED IN SPLINTER SCREEN



GUN CREW HUDDLES ON SECOND AFTER STEP OF 1,200-TON NAZI SUB WHILE STRAFED BY U. S. PLANES. NOTE OVERHANG FORWARD, AMPLE AA BATTERY



GERMANY'S WOLF PACKS

Once more starting a war with inferior naval strength, Germany followed World War I strategy of relying on a huge U-boat fleet to cut Britain's life lines of shipping and to disrupt supply routes maintained by the U. S. merchant fleet. Admiral Doenitz sent out subs in fleets of a dozen or more, as well as solitary marauders. New tactics of co-ordinated aerial reconnaissance and sneak refueling at sea were found highly efficient. The toll of sinkings rose dangerously until strategic bombing, patrol bombers, baby flattops and swarms of escort vessels all combined to overcome the German subs. Despite this, however, a large U-boat force still remains at the disposal of the German Admiralty. Recognitionally it is an important, though fairly simple, problem.



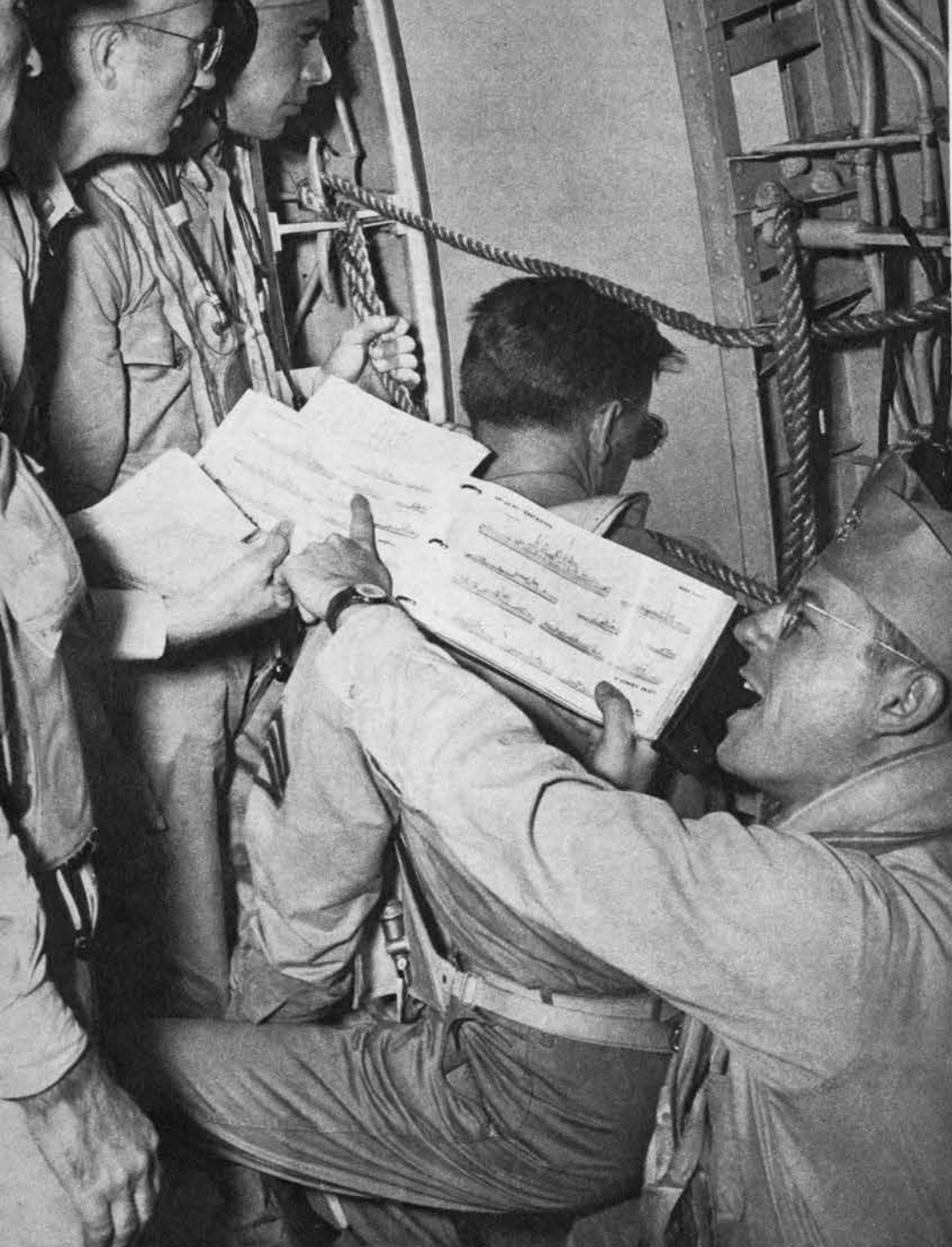
1,200-TON U-BOAT SHOWS ROUNDED CONNING TOWER THAT RISES ABRUPTLY FROM FOREDECK, FALLS AWAY IN SERIES OF GUN STEPS AFT



AERIAL PHOTOGRAPH OF 740-TON GERMAN SUBMARINE UNDER ATTACK SHOWS CONNING TOWER CHARACTERISTICS FROM DIFFERENT ANGLE



TBF'S STRADDLE U-BOAT WITH DEPTH CHARGE AND GUNFIRE. THIS MINELAYING TYPE HAS A SMALL CONNING TOWER SET AMIDSHIPS



Plane-to-ship spotting is given realistic meaning by taking the class aloft in a patrol bomber, having it identify all ships encountered with the help of manuals and other recognition aids.

RECOGNITION REFRESHER

Like all professions, the teaching of recognition is improved by frequent re-inspiration. To provide this stimulation—which in science, medicine or industry is done by professional conventions—the Army and Navy conduct refresher schools for trained recognition instructors. These courses perform two major services—they bring the men from training bases back in touch with the latest matériel and they put them in contact with officers who have seen recognition in action at the front.

At the two Navy schools, Norfolk NAS and Alameda NAS, and the AAF's school at AAFSAT (Orlando, Fla.) the instructor takes much the same course. Important phases of the work are shown in these pictures taken at the Navy's two schools. Instructor-students get out and work at actual recognition by studying planes and ships in action, both from the ground and air. They learn how they are constructed by studying them again on the field, or at anchor. In the classroom they talk to men, both from recognition and operations, who bring home to them the problems of combat. The newest training equipment and the best examples of improvisation in the field are taught by the men who devised them. After one week of this training they are better prepared than ever to train our men how to save each other's lives and kill the enemy more efficiently.

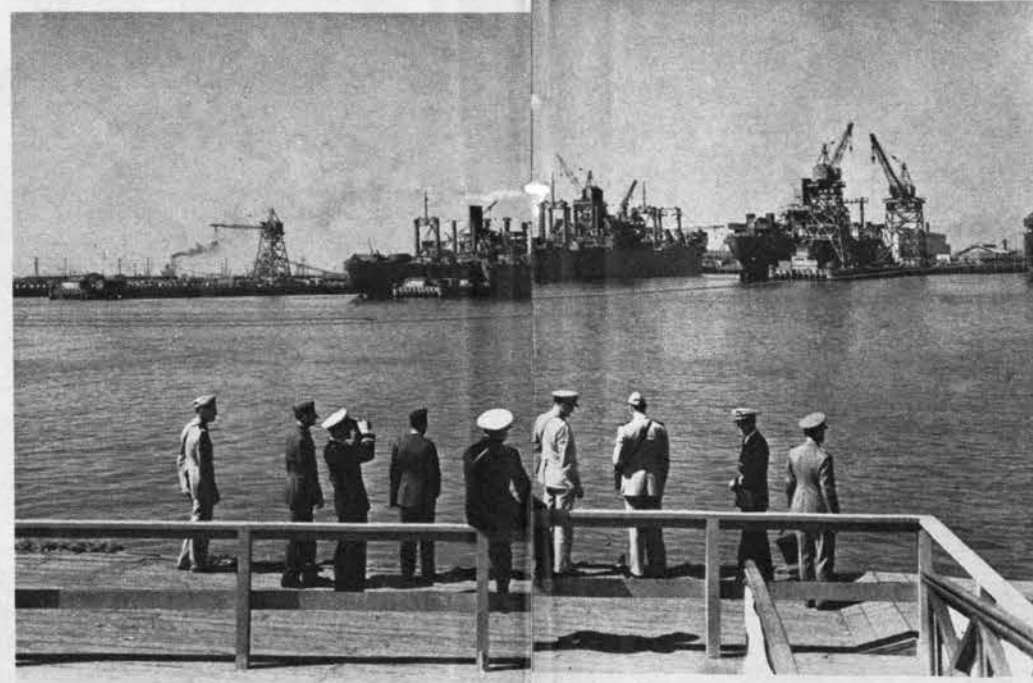


From the ground at the Alameda Naval Air Station, students train their glasses on all planes flying overhead. Thus they get to know the flight

characteristics of our own planes. Previously they will have carefully examined planes on the field, such as the F6F's ranked behind them.



Launch trips around harbors and yards bring men near warships so they can scrutinize details. They go aboard whatever ships are in port to become familiar with ship functions and operation.



At Alameda, naval cargo vessels under construction give recognition officers better un-

derstanding of merchant shipping, make the protection of transport convoys a surer bet.



Film-handling methods and the operation of new equipment take up some classroom time. Here an expert demonstrates how to mend breaks which may occur in showing 35-mm. strip film rolls.



HUGE TURRET, SQUAT CHASSIS OF M-26 GIVE IMPRESSION OF GREAT POWER. BIG 90-MM. CANNON PROTRUDES SEVERAL FEET BEYOND TANK'S BOW

NEW U.S. VEHICLES

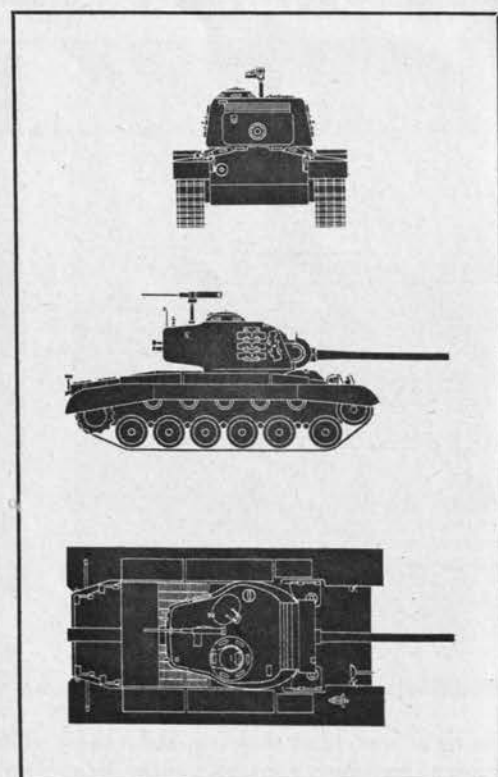
Heavy M-26 and light M-24 pass all tests, will soon see action with the Allied armored forces

Soon to go into action are two new U. S. tanks, the heavy M-26 and the light M-24. Showing new trends in American tank design, the new vehicles are broader, heavier, yet no taller than the weapons they are to supplement or replace.

Weighing 43 tons and carrying a long 90-mm. cannon, the M-26 is the biggest, the best protected and the most heavily armed tank in the U. S. arsenal. Nearly a yard wider than the Sherman, it is one inch lower and only eleven inches longer. Its most striking



Vision cupola is at the right, the .50-caliber AA MG at dead center on the M-26's big turret. For traveling the turret is turned to the rear. Hull is set very low between massive tracks.





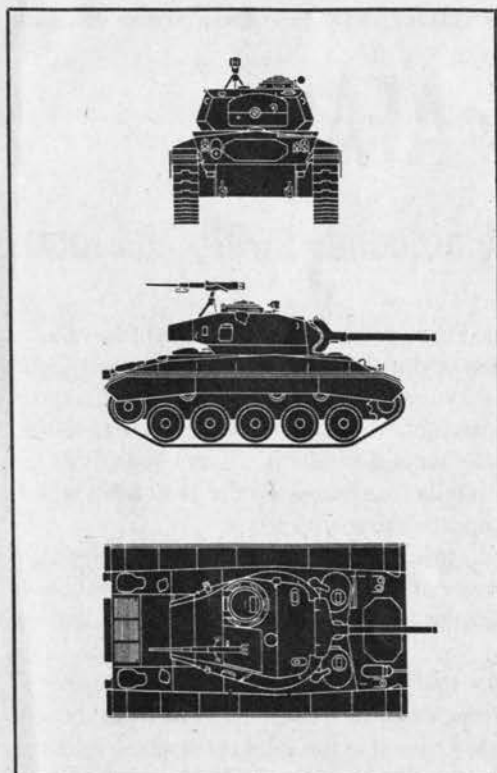
WITH A 75-MM. GUN, M-24 OUTCLASSES OTHER LIGHT TANKS IN ARMAMENT. NEARLY AS FAST AS THE M-5A1, IT IS LONGER, WIDER AND HEAVIER

feature is the enormous pear-shaped turret set well forward on the low, wide hull. With its driving sprocket at the rear and six large, evenly spaced bogie wheels in a suspension much like the Russian KV's, the M-26 has an entirely new running gear for U. S. tanks.

With the M-24 the radical departure is in the slab-sided turret with its large mantlet and 75-mm. aircraft-type gun. The top slopes down front and rear from a flat center section; the inclined sides are sharply undercut. At the front all surfaces taper inward so that

almost the entire forward end of the turret is covered by the unusually big mantlet. The hull of the M-24 is low and compact. The running gear has five large bogie wheels (one less than the M-26) set close together with the driving sprocket up front.

Both new tanks have an important aid to visibility which, when seen from the air, is an important recognition aid as well. This is the vision cupola which gives the tank commander a well-protected yet all-around view through heavy, laminated glass blocks.



AA weapon on the M-24 is set at right (see silhouette) and cupola is at the extreme left atop the turret. With low silhouette and gun extending forward, the M-24 resembles Russian T-34.



CLOSE-UP OF THE PV-1 VENTURA, WITH ITS WEALTH OF DETAIL, HELPS STUDENT LEARN THE PLANE IN EARLIER PHASES OF RECOGNITION TRAINING

SPOTTING THEM FROM AFAR

Distant views present little problem to the man who is thoroughly acquainted with total forms

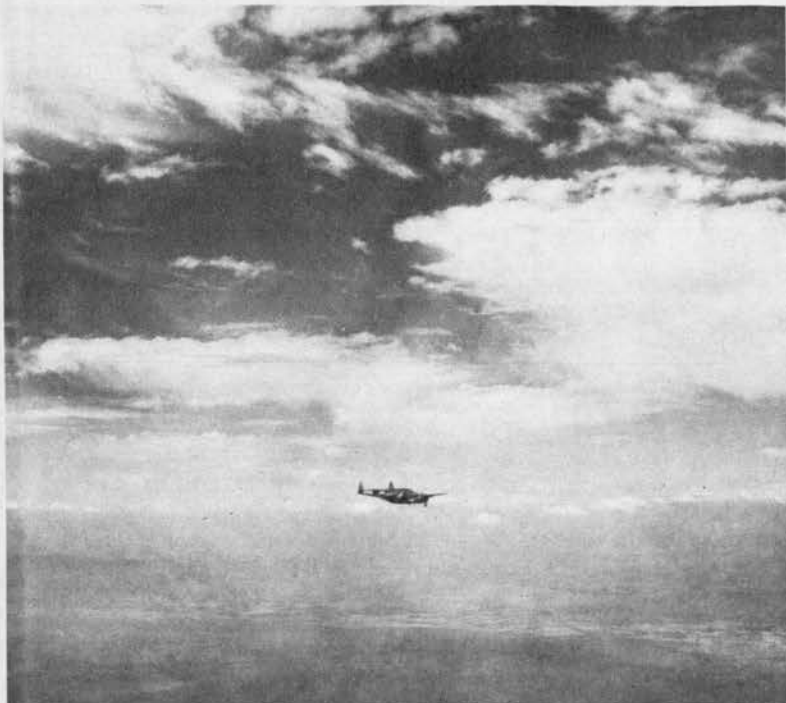
In aerial combat the man who first decides to press home the attack has the best chance of making the kill. If you are going to shoot, you've got to shoot fast. The uncertainty which leads to hesitation may prove fatal to you if the plane turns out to be a bandit. The uncertainty which leads to shooting first and recognizing later may kill more of your friends than your enemies.

Since you can only get the jump on your opponent by recognizing him first, you must learn to recognize him at the greatest possible distance. You will then be able to use the brief time of closure to get him in your sights or to identify yourself as his friend. Recognitionwise, this means that you must know all planes as intimately as you know your own.

The best way to become acquainted with any airplane is to go out to the field and look at it. But if the plane is not available, good close-up photographs, such as the picture on this page, make

a pretty good substitute. From good close-ups you will be able to get an undistorted picture of the plane's total form. Secondly, you will gain an easy familiarity with the details which go to make up the total form (in this case, the PV-1, the mid-wing, thick fuselage, high tailplane, guitar-pick fins and rudders). In any view, it is the sum of these individual details that makes up the total from which you must recognize the approaching aircraft.

This fact is illustrated strikingly by distant views on opposite page. For example, in picture at upper left, the centralized bulk says that this is the PV-1, but the small outboard fins are the distinctive feature. In the same way, in the picture next to this, the huge block of the fuselage, the midwing and the close-set, fat nacelles taken together total up to the Ventura's shape head-on even though the tail is invisible. In every case it is the total form which tells the story. In all views the plane can be only one patrol bomber, the PV-1.



The best photographic test of a spotter's knowledge is made up of pictures taken at combat distances. The six pictures above, all views of the PV-1 Ventura, show how this U.S. patrol bomber would look to you

in the field. However, the total personality of the Ventura as seen in photographs is a composite of both close-up and distant views. On the opposite page is your known friend; above, a plane to be spotted.

NEWS & MISCELLANY

NEWS

In connection with development of new Japanese airplanes (page 25), information on types most likely to be seen in the near future is given below.

FRANK 1 has probably already been in combat. Top speed should be in the 400-m.p.h. class. Maneuverability should be excellent, range comparable to Oscar's. It is potentially the most dangerous fighter the Japs have developed.

GRACE 11 is a new torpedo plane. It is expected to be fast, maneuverable, with a high rate of climb.

ROB 1 is expected to be a new Jap Army high speed inline-engine fighter.

STEVE 1, "super-high-speed fighter," may be nearing the operational stage.

PAT 1 is a "super-range, high-speed fighter," probably intended for long-range escort duty.

REX 11 will probably replace Rufe as the main navy floatplane fighter.

SAM 11 is a new carrier-based fighter which may eventually replace Zeke 52.

GEORGE 11, now operational, is expected to have top speed of around 400 m.p.h.

The largest of Jap carriers, **Taiho**, is not a member of the Shokaku class as previously reported. Slightly larger than the Shokaku, the Taiho has an island similar to the Hayataka's. General shape of hull and island is dangerously like the *Illustrious*. It is the only Jap carrier seen with full-length flight deck and forward end of hull closed in. Stack has outward slope similar to Hayataka's.

PG(E)-1 is now known as the PF Mikura class. It has typical Jap hull lines with clipper bow whereas U.S. PF has raked bow. Deck break of U.S. PF is much farther aft. Jap's stack is much heavier and bridge has blocked appearance.

New Jap **CM** has been sighted in the Bonins. Similar to Itsukushima minelayer in location of stack, it has 320-ft. length and stack well aft.



28TH BOMBARDMENT GROUP SANK JAP SHIP (RIGHT), IDENTIFIED IT FROM JOURNAL PHOTO (LEFT)

FW-154 is described as the German attempt to build an aircraft comparable to the Mosquito—a twin-engine, high-speed airplane of wooden construction. Probably in an advanced stage of development, it is believed to be a nightfighter as well as a day interceptor. The leading edge of the high wing is straight, the trailing edge slightly tapered. Engine nacelles project slightly behind the trailing edge. The nose is fairly long. The tail assembly is marked by a single fin and rudder. A tricycle landing gear is employed. The FW-154 is believed to have a speed around 400 m.p.h. at 22,000 ft.

LETTERS

Sirs:

Attached hereto is a photograph of a Japanese ship sunk off Paramushiru by an aircraft of this organization on Aug. 27, 1944. On page 19 of the *Recognition Journal* for August is shown a picture of the same type of vessel, a wooden sub-chaser beached on New Guinea. Identification of the vessel sunk was made possible by the above-mentioned picture in the *Recognition Journal*.

For the Commanding Officer:
Hdqrs. 28th Bombardment Group (Composite)
Office of the Commanding Officer
Seattle, Wash.

CORRECTIONS

In the October *Journal*, page 11, the tank second from left in the bottom picture is a PzKw III, not a PzKw IV.

Answer No. 10 for Quiz No. 2 on page 24 of the August issue should read Nick, not Lily.

On pages 26, 28, October *Journal*, the Corsair used by British Naval Aviation is called a F4U-2. Actually it is the Corsair II, a clip-winged F4U-1.

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QUIZ ANSWERS

QUIZ NO. 1

1. Churchill
2. Japanese 2597 medium tanks
3. L to R: U.S. M-4 (with Scorpion), Universal Carrier, M-4
4. U.S. M-10's
5. L to R: Two PzKw V's, PzKw III, PzKw V

QUIZ NO. 2

1. A-20
2. F6F
3. Sunderland
4. Zeke
5. Mosquito
6. Beaufighter
7. Sally
8. SB2C
9. A-26
10. B-25
11. Nell
12. F6F

QUIZ NO. 3

1. L to R: London CA; Devonshire Class CA; Kent Class CA; *Illustrious* Class CV
2. Front to Back: *Illustrious* Class CV; Nelson Class BB; Furious CV

3. Four Atago Class CA's (Chokai-Maya Group)
4. Tone Class CA
5. Mikura Class PF (Jap Frigate)
6. Queen Elizabeth Class BB
7. L to R: Dido Class CL; Argus CVE; Nelson Class BB; *Illustrious* Class CV; Fiji Class CL

QUIZ NO. 4

1. Casablanca Class CVE
2. L to R: Independence Class CVL; Essex Class CV (3); Enterprise CV
3. Independence Class CVL (Fletcher Class DD in background)
4. Sangamon Class CVE
5. Furious CV (British)
6. Shokaku Class CV (Jap)
7. Enterprise CV
8. *Illustrious* Class CV (British)
9. Sangamon Class CVE

QUIZ NO. 5

- | | |
|------------|-----------------|
| 1. P-51 | 9. Nell |
| 2. Typhoon | 10. A-26 |
| 3. Warwick | 11. Nell |
| 4. B-29 | 12. Beaufighter |
| 5. CG-4A | 13. PE-2 |
| 6. Judy | 14. OS2U |
| 7. Jake | 15. F4U-1 |
| 8. Jill | |

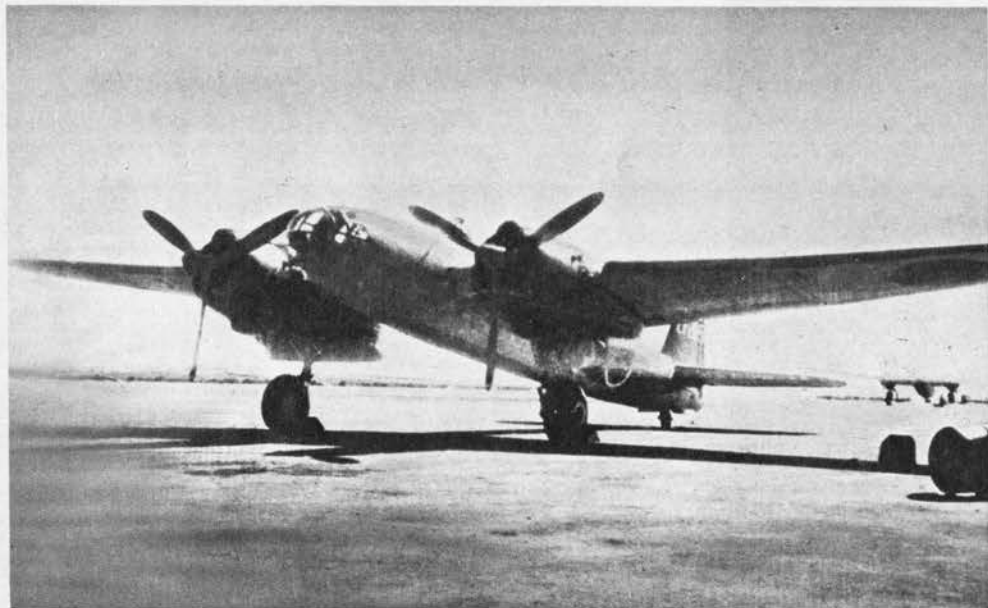
CREDITS

The pictures used in the *Journal*, unless otherwise specified (see below), came from the Allied Armed Services.

- 2—Second row, Acme; fifth row, Frank Scherschel
- 8—Bottom, British Official Photo from International
- 9—Bottom, Acme
- 20—Top center, Acme
- 21—Top, Wide World
- 24—Top left, Elliot Elisofon; fifth row left; Myron H. Davis
- 34—Second row right, British Combine; fourth row left, Jarché copyright London Illustrated



The British submarine shown on the cover of this month's *Journal* is a vessel of the Triton Class photographed while on patrol in the Mediterranean. The picture was taken from the deck of another nearby unit of Britain's Mediterranean Fleet.



DISTINGUISHING FEATURES: Twin-engine mid-wing monoplane. Long wing is broad, thick at the roots, bluntly rounded at the tips and has slight dihedral. Wing is slightly more tapered on trailing edge than on leading edge. Compact nacelles are underslung, project well ahead of the wing. Fuselage is long, slender and symmetrical with a pointed, glassed-in nose. Cockpit cover is relatively small, has blister effect.

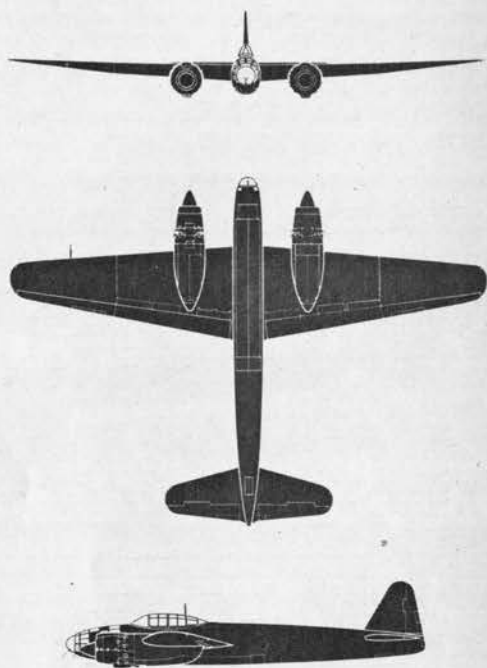
Tailplane tapers to rounded tips. Triangular fin and rudder has more distinct slant on leading edge.

INTEREST: Frances is a land-based, multi-purpose Navy bomber which has been referred to as a Jap equivalent of Germany's versatile Ju-88. Designed to carry light loads long-range, Frances serves as a level, torpedo and divebomber. A nightfighter version also exists.

OCTOBER 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAE 3

FRANCES II



SPAN: 65 ft., 7 in.
LENGTH: 49 ft., 2 in.
APPROX. MAX. SPEED: 350 m.p.h.
SERVICE CEILING:

RESTRICTED

NOTE: This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.



DISTINGUISHING FEATURES: Twin-engine low-wing monoplane. The wing has moderate dihedral from the roots, slight fillets at the rear. Leading edge is nearly straight, trailing edge has moderate taper to raked tips. Nacelles are fat and underslung and extend almost to end of nose. Fuselage is narrow with a short pointed nose. Tailplane edges taper equally to rounded tips. Fin and rudder has rounded shape. Greenhouse

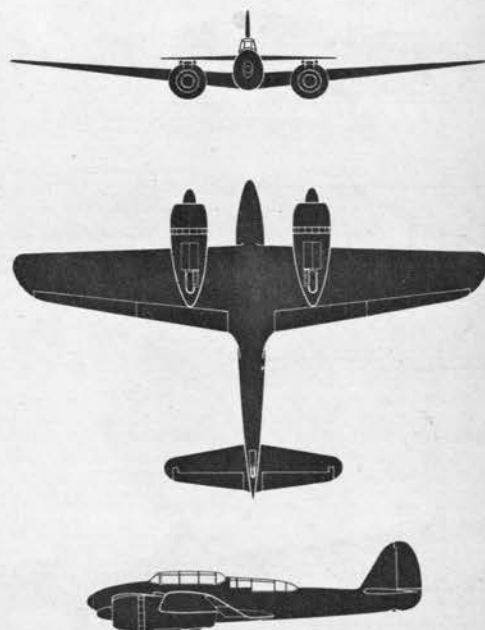
is very long and stepped down toward the rear. These different levels give Irving a distinctive dorsal line.

INTEREST: Irving is used for nightfighting and reconnaissance. Although lack of maneuverability and relatively low speed have hampered performance, production emphasis is probably being given to the night-fighter armed more heavily with four 20-mm. cannon.

OCTOBER 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAE 3

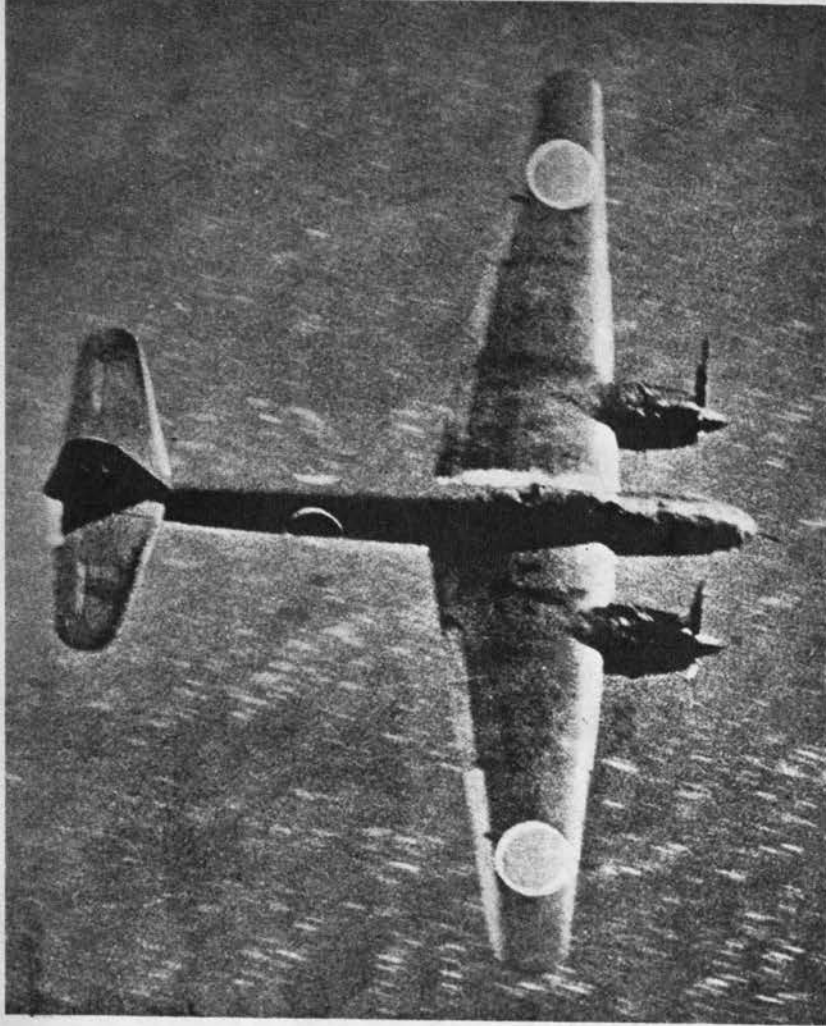
IRVING II



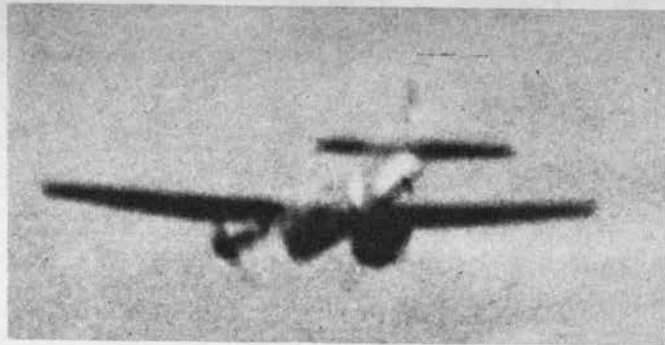
SPAN: 55 ft., 9 in.
LENGTH: 40 ft.
APPROX. MAX. SPEED: 315 m.p.h.
SERVICE CEILING: 30,500 ft.

RESTRICTED

A



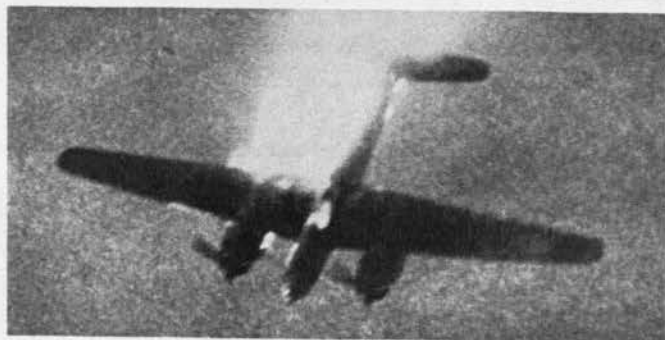
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C



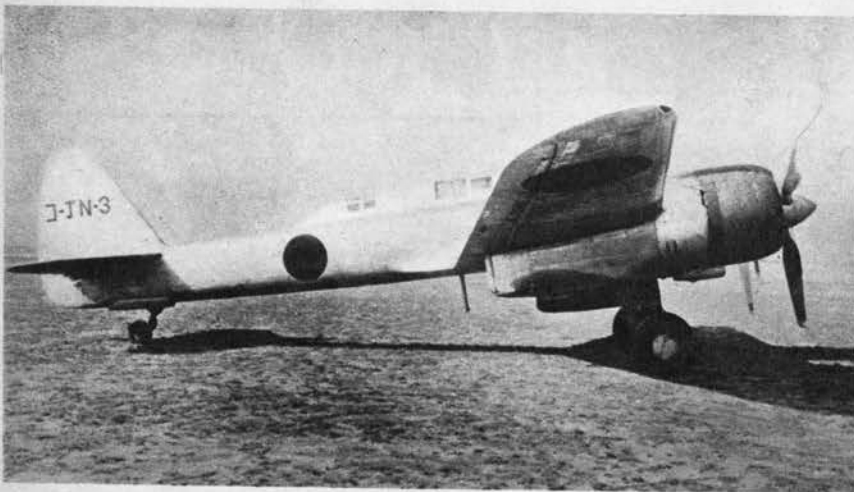
D



FRANCES, a versatile new Japanese bomber, seems likely to become a stand-by of the Imperial Navy in bombing and torpedo attacks. When it first appeared in the Pacific, Frances was given the provisional designation of "Y-20." Japanese name is "Ginka."

IRVING can be distinguished by its unusual stepped-down greenhouse, designed to give maximum visibility to the reconnaissance version. The nightfighter Irving is called "Gekko" or "Moonbeam" by the Japs. Like Frances (above), Irving is built by Nakajima.

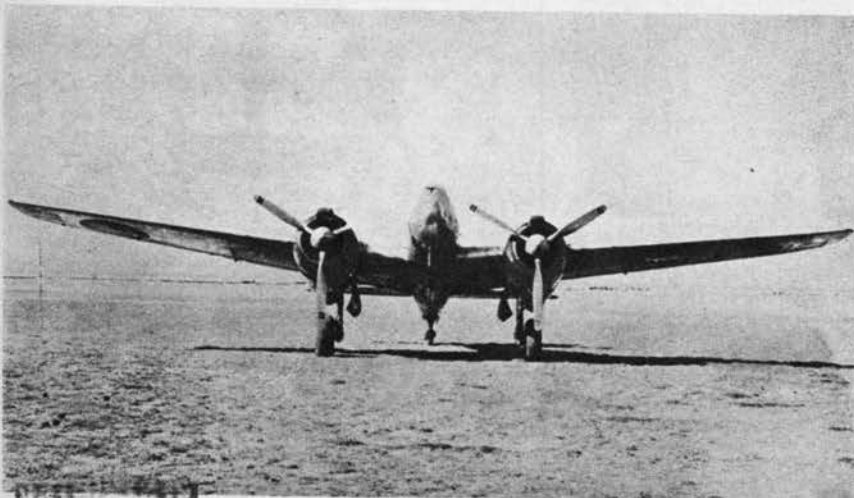
A



B



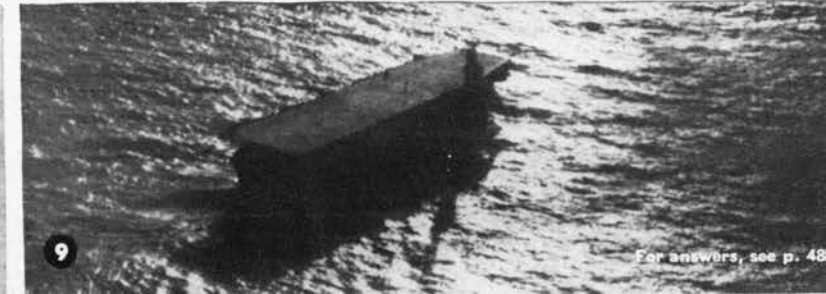
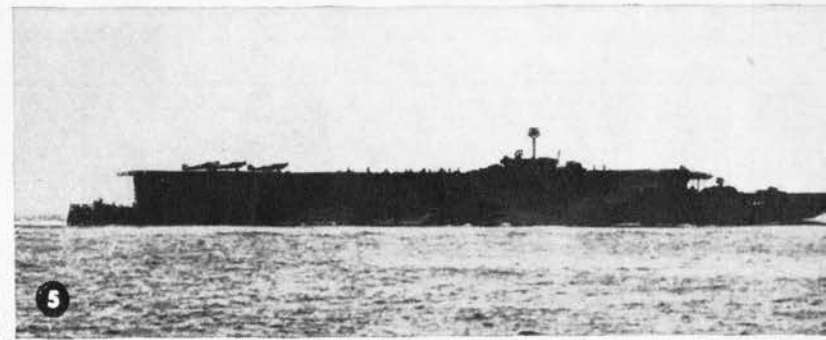
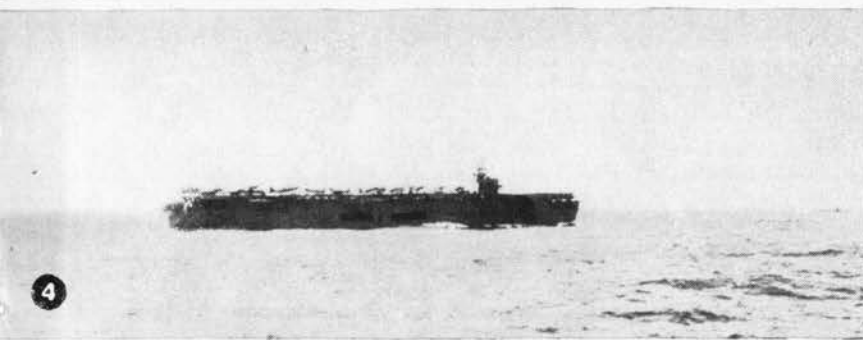
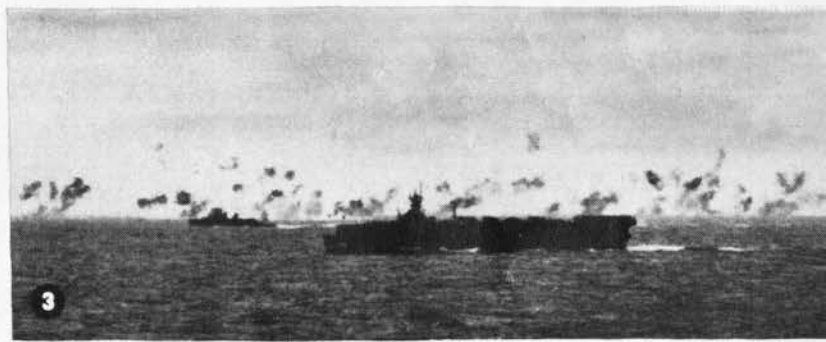
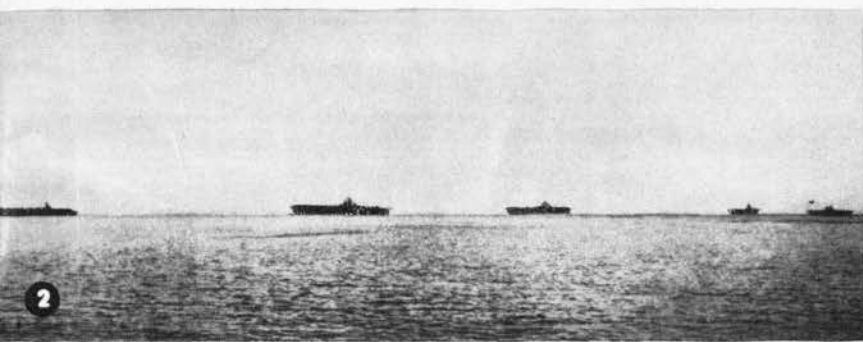
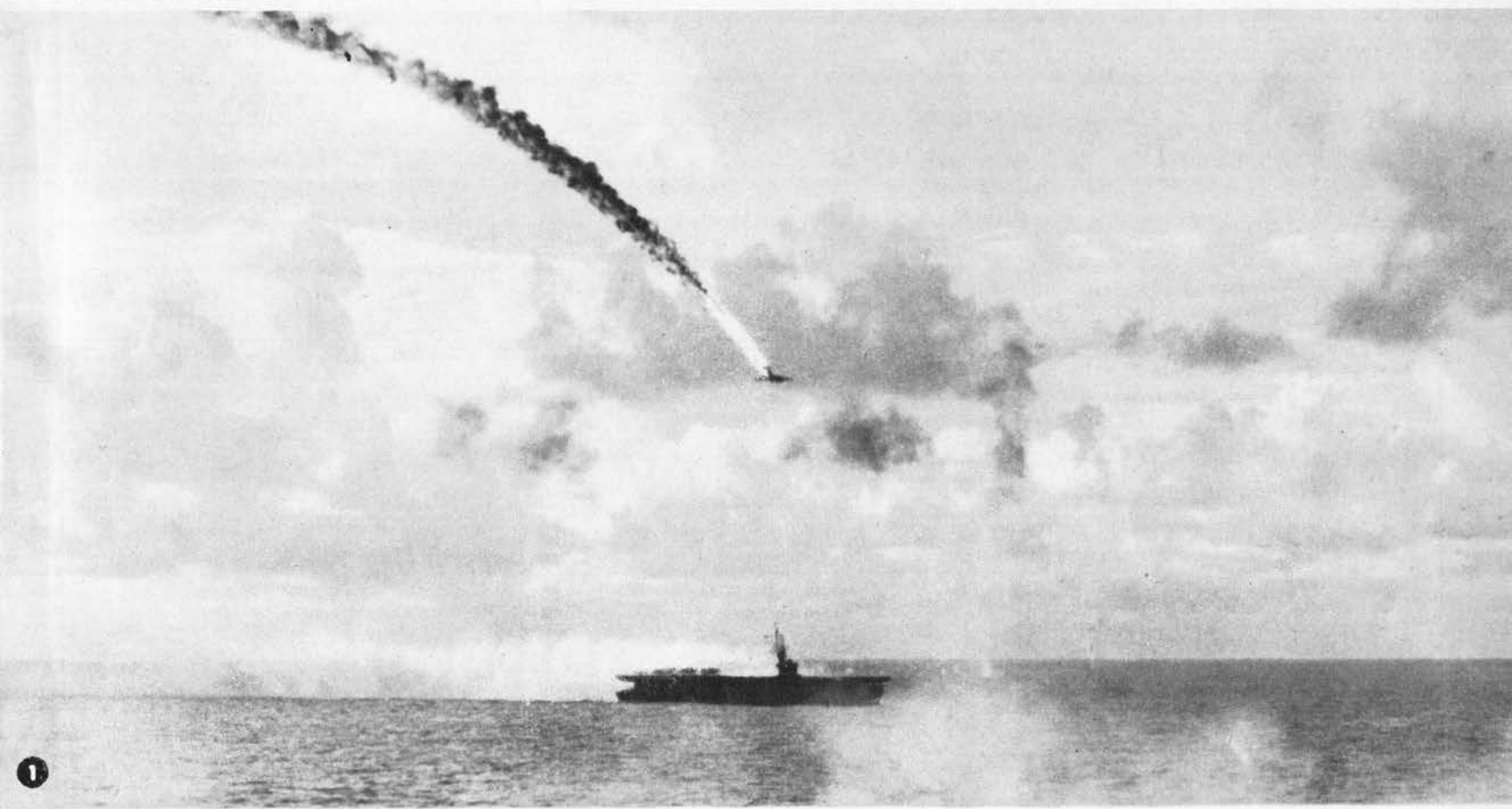
C



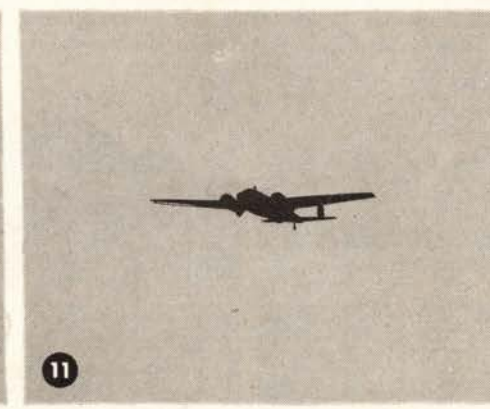
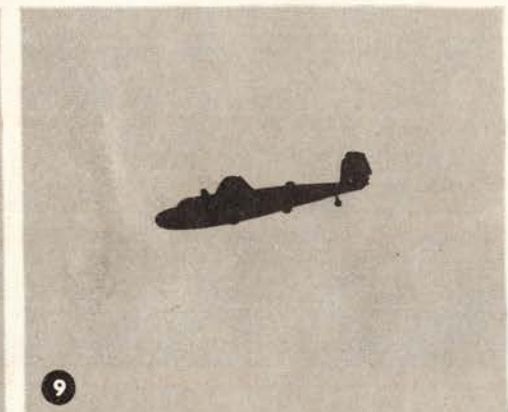
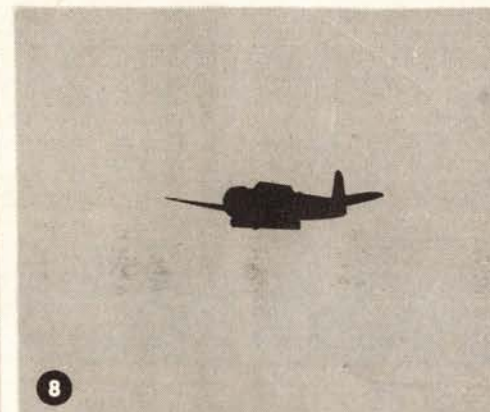
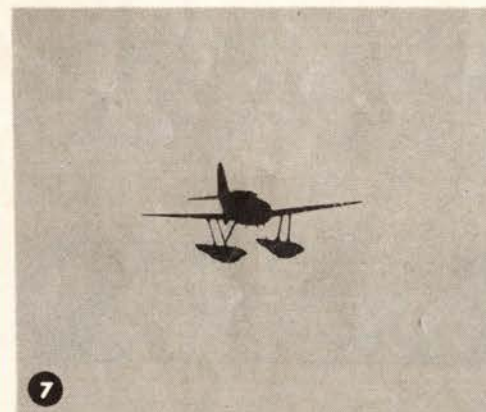
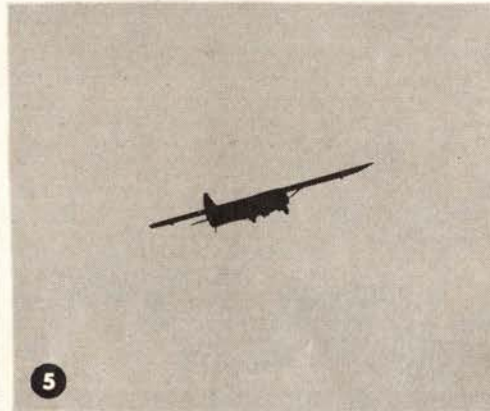
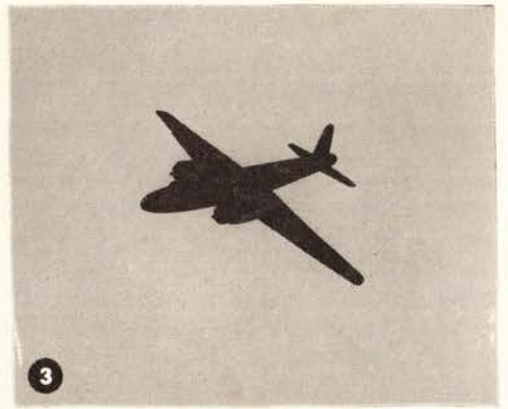
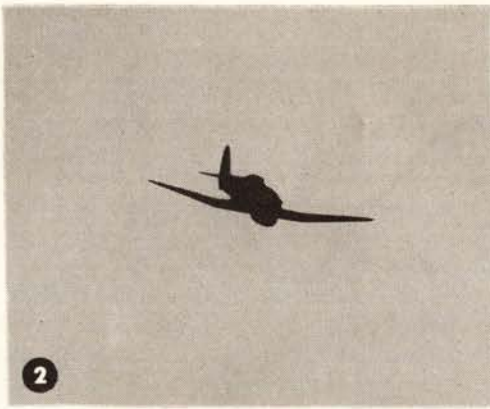
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QUIZ NO. 4: CARRIERS OF THREE NAVIES



QUIZ NO. 5: THESE ARE SILLOGRAPHS



RECOGNITION

JOURNAL



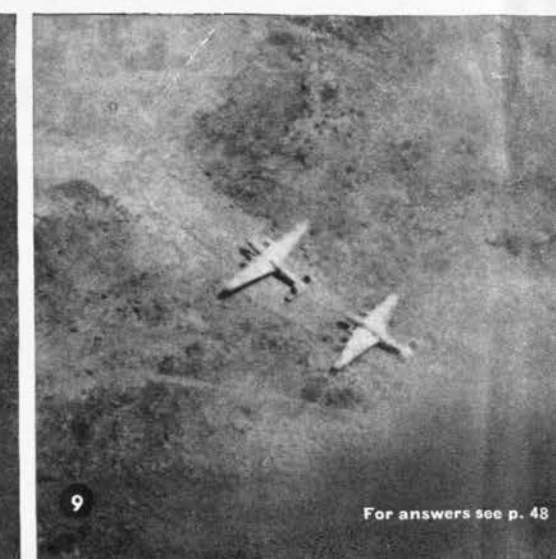
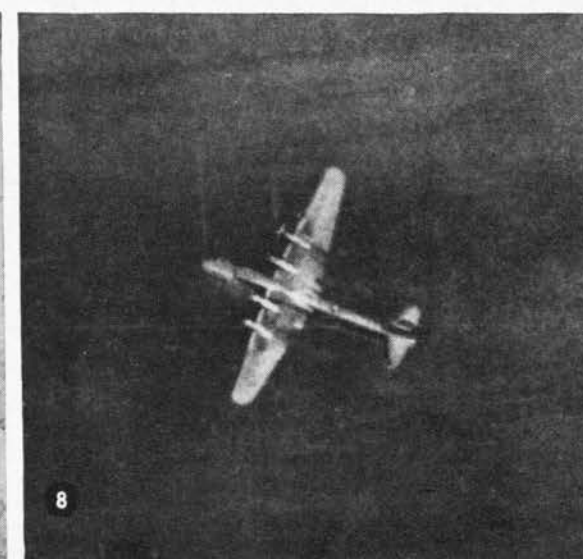
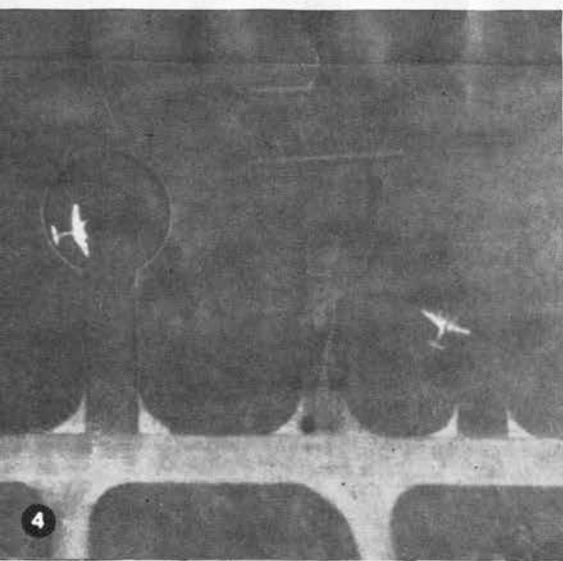
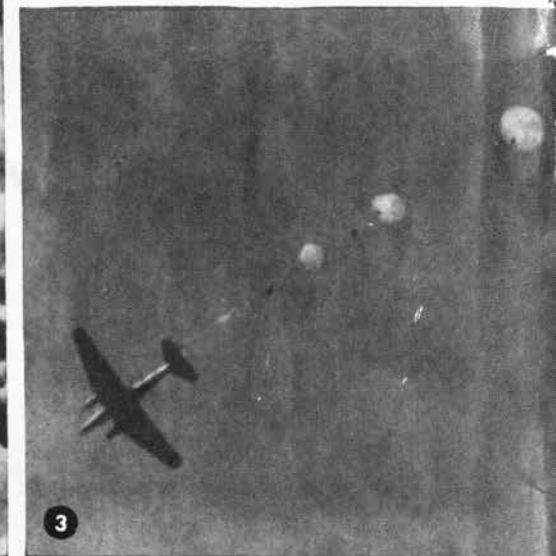
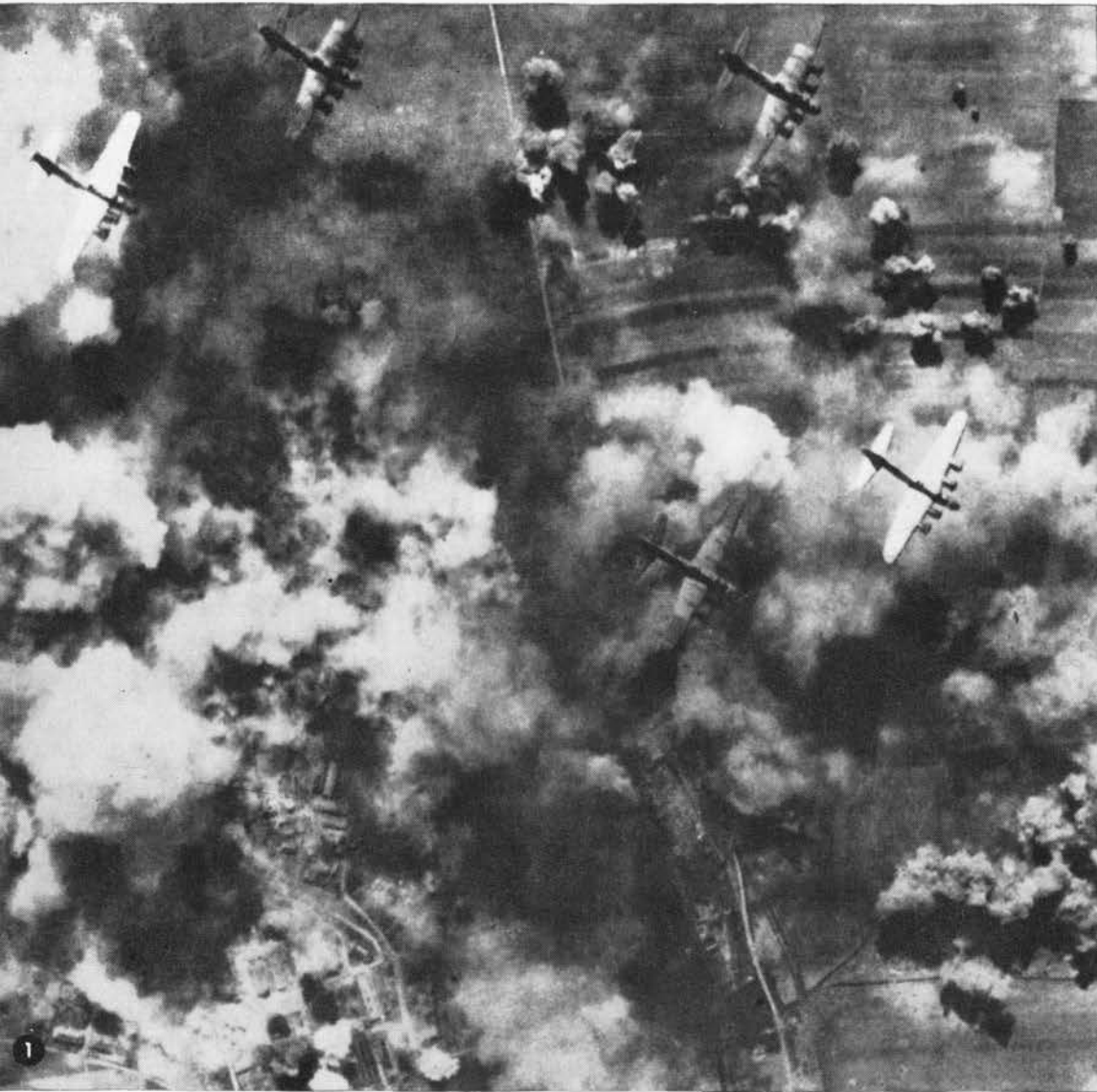
U. S. ARMOR

~~RESTRICTED~~
DECEMBER, 1944
NUMBER 16

WAR DEPT.
NAVY DEPT.



QUIZ NO. 1: WARPLANES IN PLAN VIEW



RECOGNITION

NUMBER 16

DECEMBER, 1944

JOURNAL

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OVER EUROPE, SHARP RECOGNITION IS IMPERATIVE AS FRIENDLY AND HOSTILE FIGHTERS WHIRL THROUGH THE FORTRESS COMBAT BOXES

WE CAN'T LET UP!

History of recognition experience in the Eighth AAF provides example for Pacific airmen

Always with us is the problem of the flier who thinks that recognition is unimportant. We have had it in Europe. We occasionally have it in the Pacific. As an example of the tragedy neglect can bring, the *Journal* is detailing the slow development of recognition in the Eighth Army Air Force. If this history is taken to heart, the problem will be reduced in the Pacific.

Before the Eighth arrived in England, Nazi attacks on English training areas had driven home to the RAF the importance of knowing all aircraft. Sweeping in at opportune times, heavily armed Nazi fighters had a field day knocking down defenseless trainers. When Hurricane squadrons rose to stop them, the English pilots were overeager and as a result the number of friendlies shot down by friendlies went up at a frightening rate. Only intensive schooling in recognition curbed the fratricide.

Though warned by RAF experience, U. S. airmen had to learn

for themselves. The first Fortress raids built up a legend of invulnerability. But when the Nazis discovered the earlier Fort's underarmed nose, B-17's went down in great numbers. From then on all fighters approaching bomber formations were considered a threat and Allied as well as enemy planes suffered.

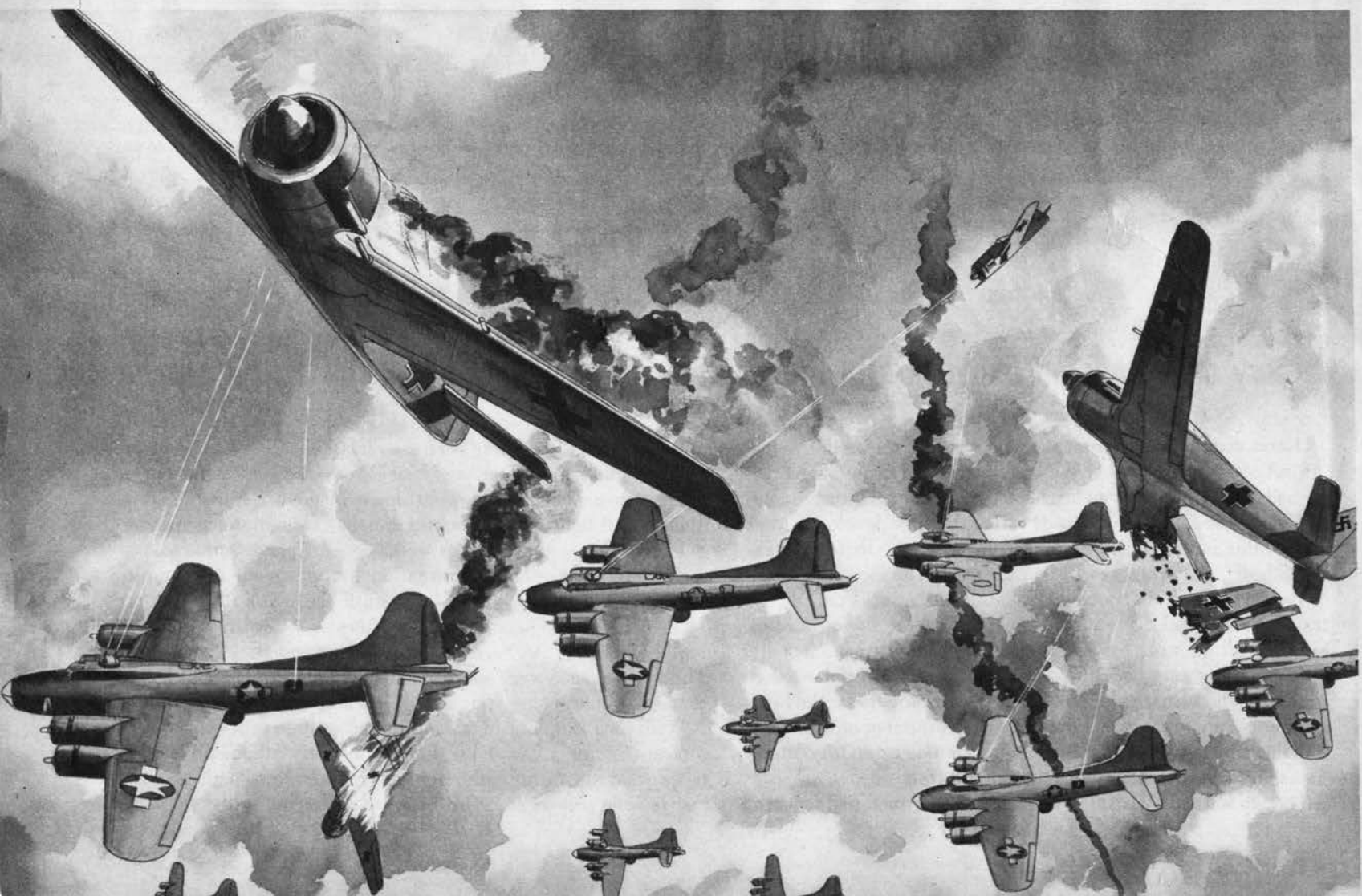
Despite attempts at co-ordination by both commands, nothing materially reduced the losses until the first fully escorted U. S. bomber raid against Antwerp May 4, 1943. Under an umbrella of P-47's, the Forts sailed out, over and back unscathed. The few damaged were guarded safely home by the 47's. From then on, not knowing your friends became the worst of crimes.

With the Philippine invasion, the recognition problems of Europe are finding a Pacific parallel. Soon many Allied and enemy types will be operating within limited areas. Unless Pacific airmen realize what this means, our losses to ourselves will skyrocket.



Gaggle of trainers over the English midlands made a succulent target for Nazi intruders. Eager Hurricanes alerted to stop the slaughter often lost the Nazis in the swarm and shot down trainers by mistake. To correct this the RAF started intensive recognition training.

Fortress crewmen, though warned of the importance of recognition by the RAF, grew cocky during their first raids. The Germans made only tentative rear attacks on the B-17's. Slow rate of closure made the Nazis sitting targets, an easy prey for the Fortress gunners' .50's.

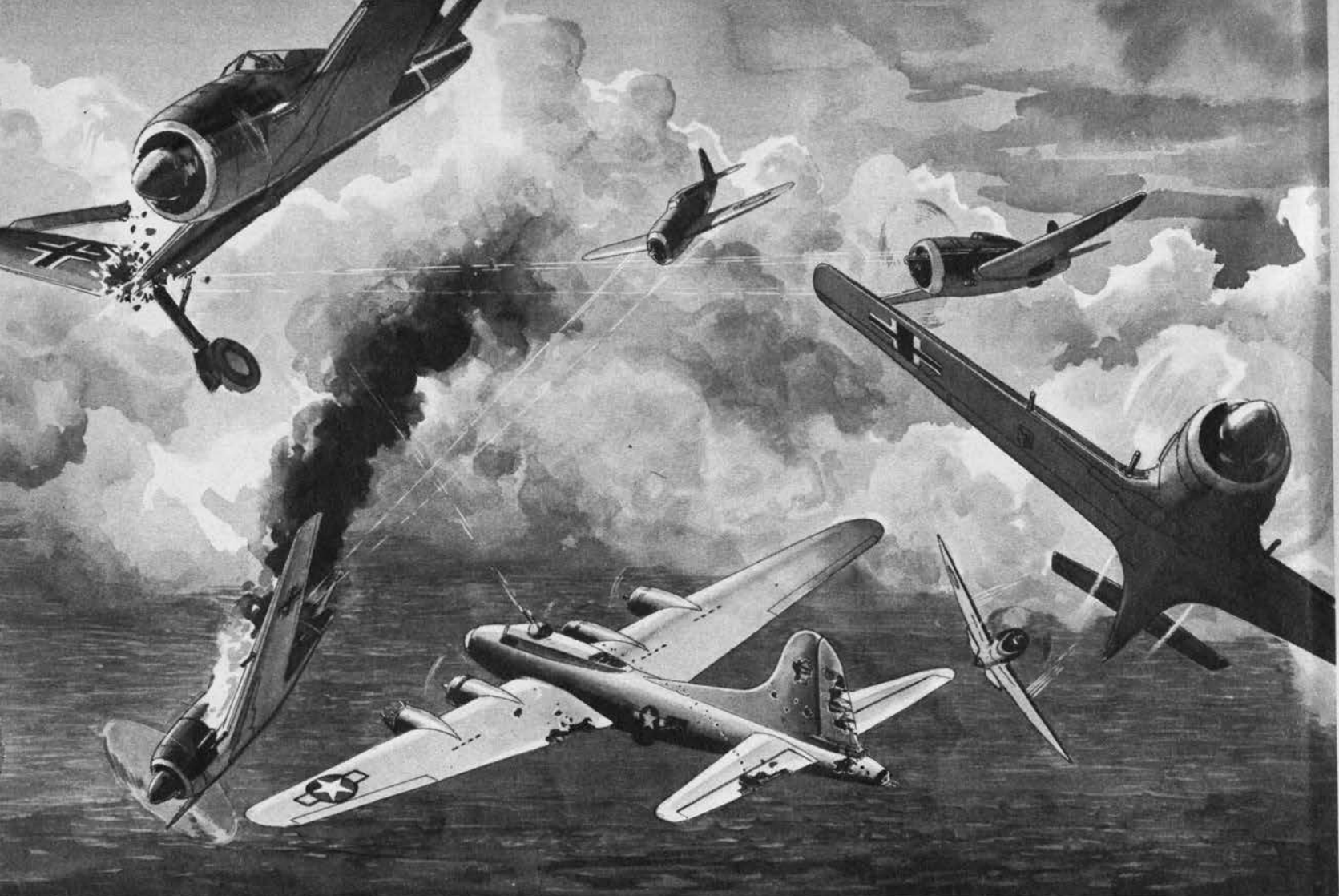




Head-on attacks on early Fortresses, then weakly armed in the nose, destroyed forever the idea that B-17's could not be shot down. As our losses mounted the entire daylight bombing program became endangered. It was evident that mighty Fortresses also needed fighter cover.

First cover for the B-17's was supplied by Spitfires and P-47's but the fighter-wary B-17 gunners were weak in their recognition and would not let their "little friends" approach. Every fighter, they had decided, was a threat to their lives. As a result, our fighters got badly shot up.





Full fighter cover restored bombers' faith in fighter protection, made them recognition-conscious. The first such raid, against Antwerp on May 4, 1943, saw no bomber losses. Losses in later raids were also low. Stragglers, chief prey of Nazi fighters, were shepherded safely home.

Guarded back to England, the crew of one shattered Fortress parachuted safely over the home base of its fighter escort. A gunner who had completed his 25th mission rushed out on the field to greet a P-47 pilot, threw his arms around him and cried, "Boy, how I love you."





Over the Japanese homeland, the melee of combat found in Europe may well be duplicated. As the war against Germany ends, the full weight of American aviation will be thrown into the war against Japan. Although so many types may not be seen at one time in one limited

area as the artist has portrayed here, the greater number of planes available for the Japanese war will consistently fill Japanese skies. The airman who cannot distinguish Tonys from Mustangs or Tojos from Thunderbolts will be a greater liability than any winning team can support.

NEW TEMPEST HAS A RADIAL ENGINE

Not since 1940, when Gladiator biplanes powered with Bristol Mercury engines challenged Axis aircraft in Norway and the Mediterranean, has the RAF sent up a single-seat fighter plane with an air-cooled power plant. But with the development of the Bristol Centaurus, which matches the power of the inline Napier Sabre and Rolls-Royce Griffon, the British have begun large-scale production of a radial-engine fighter, the Tempest II.

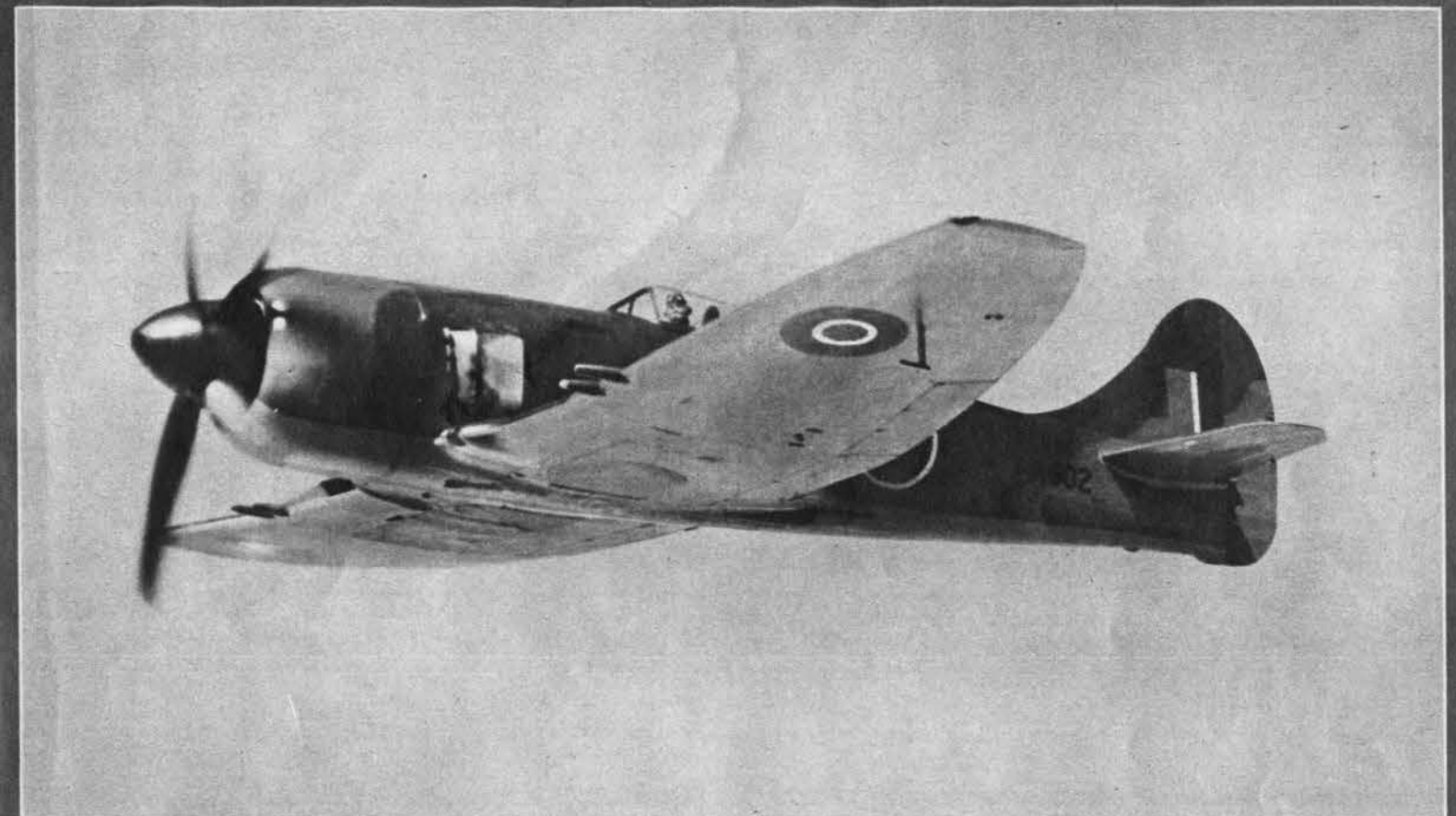
Except for the new nose and air intakes on the wing's leading edge, the Tempest II is virtually the same as the Tempest V (see *Journal* for June and September). Like the Typhoon it has a rounded rudder and straight inboard panel of the wing, trademarks of Hawker's famous designer, Sydney Camm. As a matter of fact, this inboard panel is the Tempest II's most vital recognition feature. If it had the more conventional wing with dihe-

dral from the roots, its round nose would inevitably create confusion with the FW-190 and several Japanese airplanes.

Close examination of the silhouette of Tempest II in last month's *Journal* will reveal an unbalanced wing section on either side of the fuselage. This feature is shown more clearly below. Extending forward of the wing's main surface, this section contains three air intakes, two to starboard and one to port.



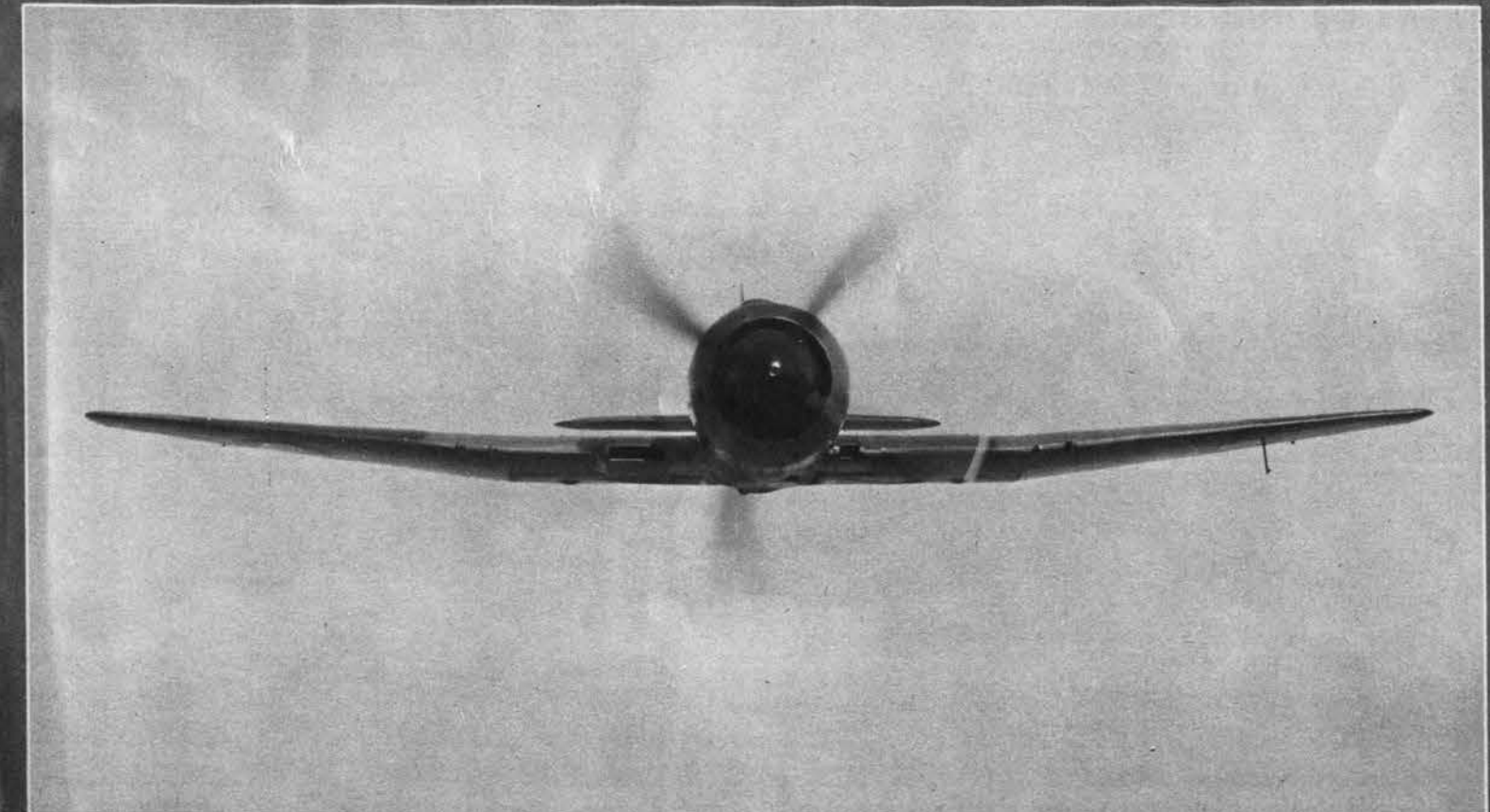
UNIQUE COOLING SYSTEM ON TEMPEST II BREAKS WING'S LEADING EDGE ON EITHER SIDE OF FUSELAGE. ARMAMENT CONSISTS OF FOUR 20-MM. CANNON



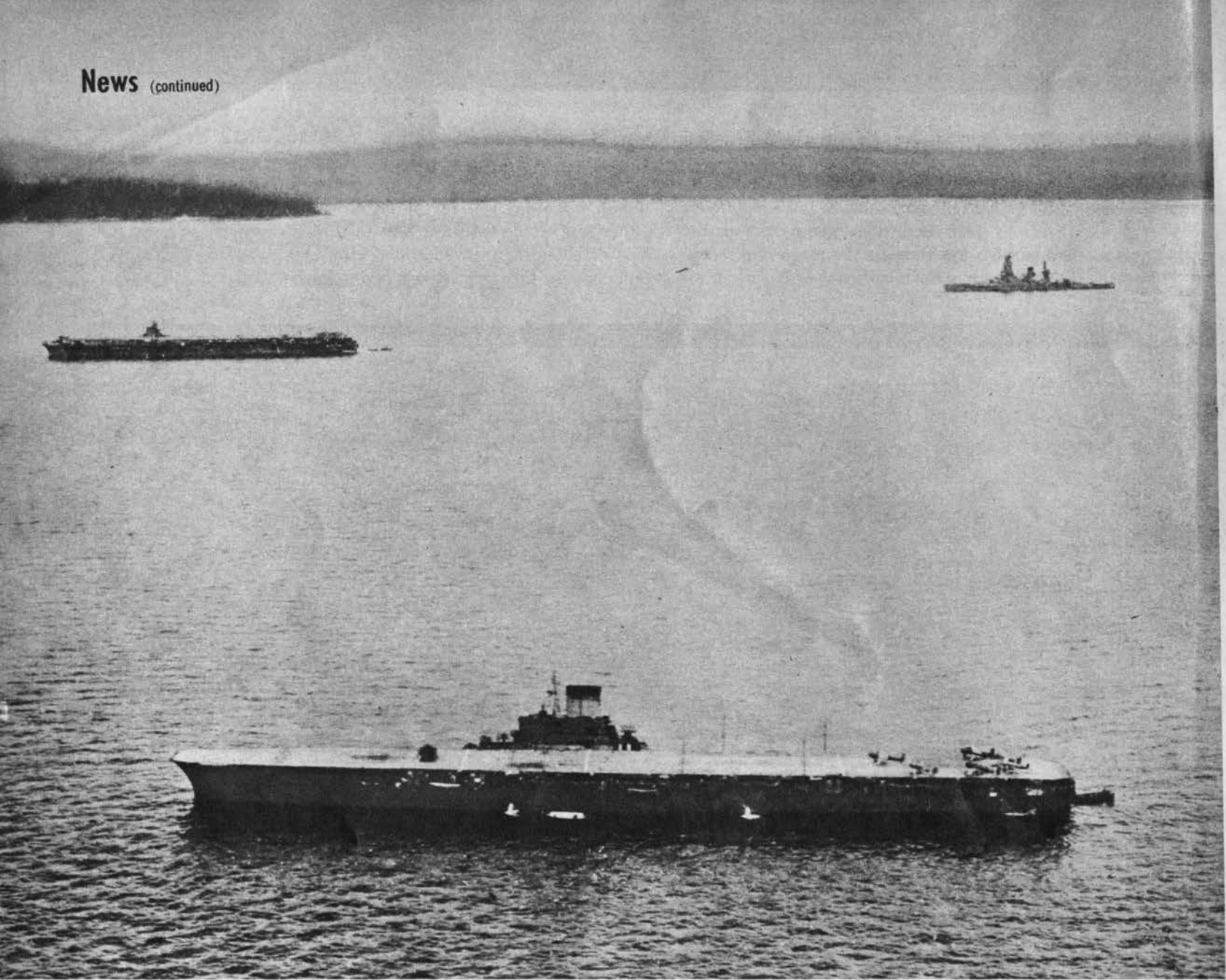
HUGE SPINNER MAKES TEMPEST II TEN INCHES LONGER THAN TEMPEST V. WITH BLUNT TIPS AND CURVED TRAILING EDGE WING IS LIKE THAT OF P-47N



RUDDER EXTENSION BELOW THE BELLY LINE AND THE BIG FIN'S FORWARD FAIRING CURVE CHARACTERIZE TAIL ASSEMBLY OF BOTH TEMPEST II AND V

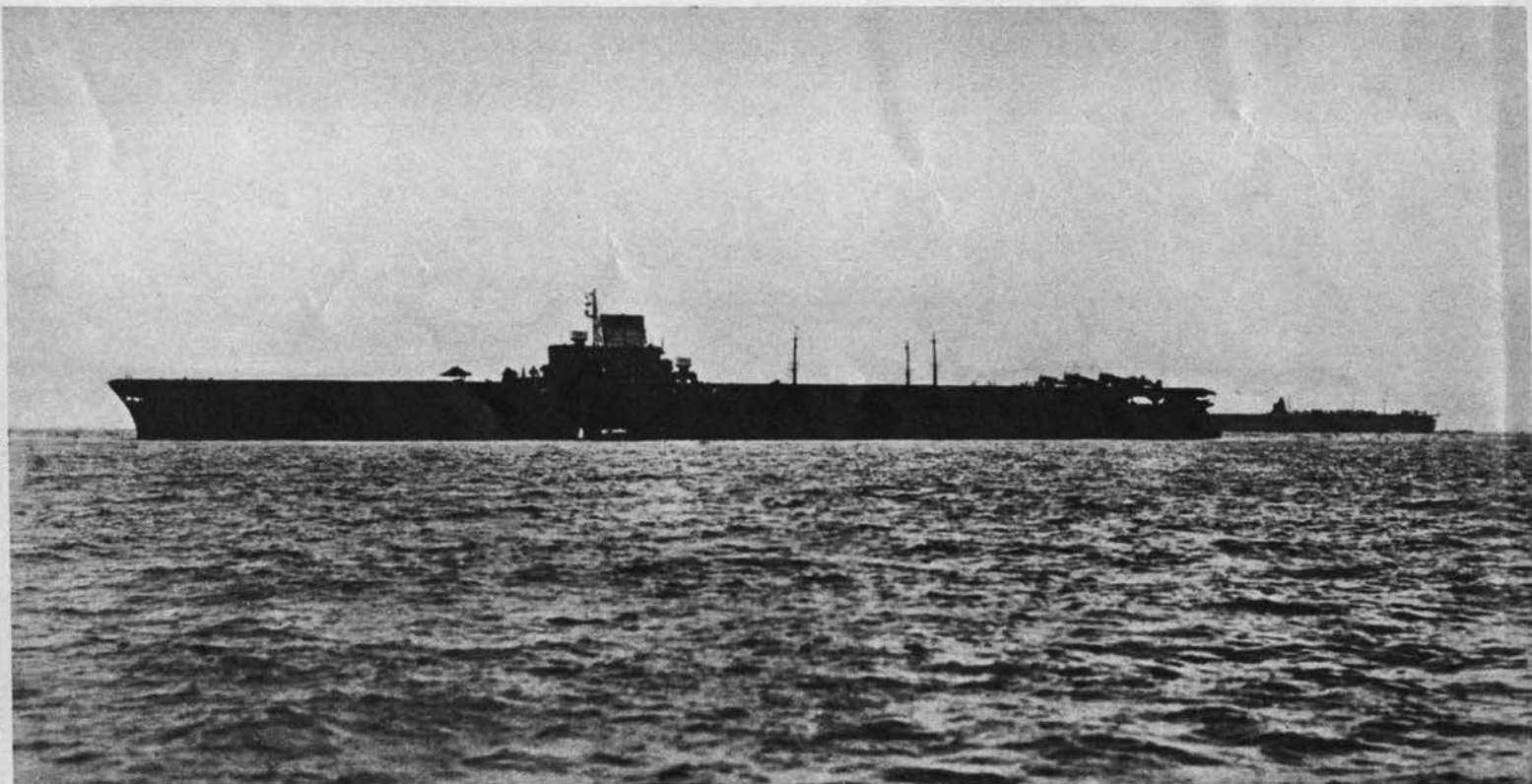


OBSERVERS MUST LEARN COMBINATION OF ROUND NOSE, STRAIGHT INBOARD PANEL AND OUTBOARD DIHEDRAL TO AVOID CONFUSION WITH ENEMY



Taiho's large island, full-length flight deck are unusual for a Jap CV, give it heavier, more compact appearance than Shokaku in background

(left). The two CV's and Nagato Class BB (right) alone in Singapore harbor symbolize lack of support types that hampers the Japanese Navy.



Taiho's solid profile, without large opening at the bow, sets it apart from all other aircraft carriers of the Japanese fleet. Flight deck blends

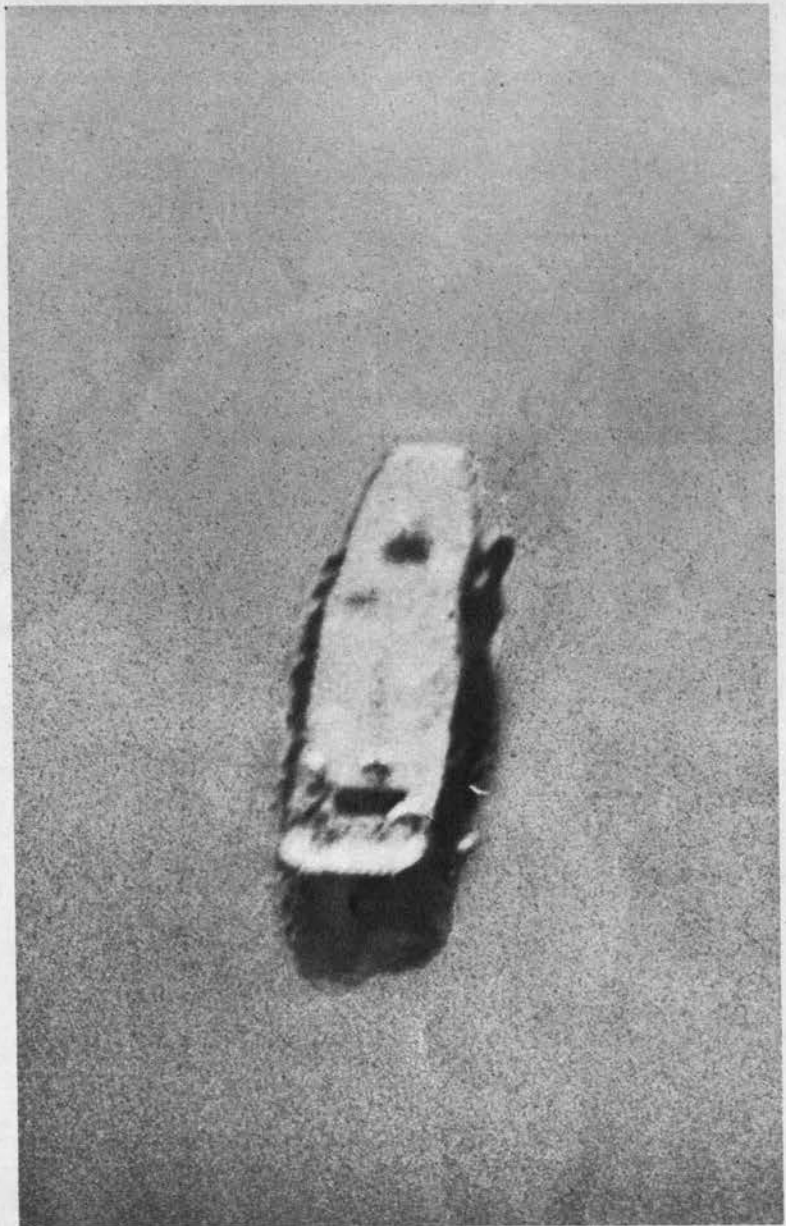
smoothly into clipper bow but it is not enclosed at the stern, giving a somewhat unfinished effect. The island is set forward of amidships.

NEWEST JAPANESE CV IS THE TAIHO

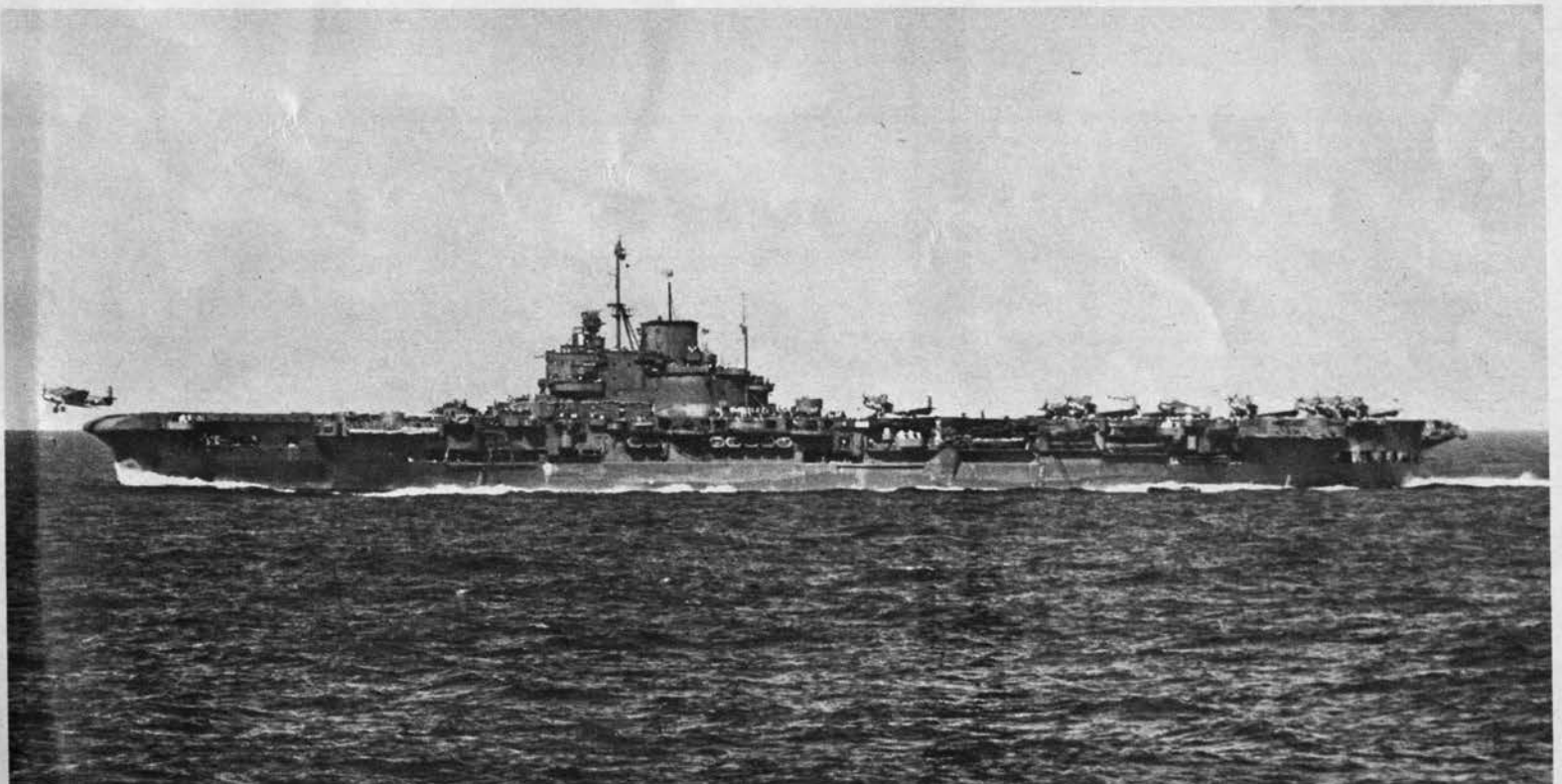
"Too little" sums up Japan's carrier power during the last two years, and "too late" may well apply to formidable reinforcements like the Taiho. The balance of naval aviation in the Pacific is now tipped so heavily in our favor that half a dozen Taihos could not alter it. Nonetheless, the new carrier is a powerful weapon in its own right and a major addition to the Japanese fleet. Whether it serves as a threat or primarily as a target for our offensive strength, the Taiho is worth careful study. Fortunately the *Journal* is able to introduce this new capital ship with the finest photographs we have yet seen of any Japanese CV.

First keel-up carrier commissioned by our enemy since Pearl Harbor, the Taiho is one of the largest warships ever launched from a Japanese shipyard. Approximately 850 feet long, it approaches our Essex Class in size and presumably in power. An estimated 80 planes can be carried, while defense is provided by numerous AA guns in sponsons fringing the flight deck.

Significant also is the Taiho's design. In the past Japanese naval architects have consistently whittled down the size of carrier islands, or eliminated them altogether by placing elements of the bridge below the flight deck. In 1942 two passenger liners were converted into the Hayataka Class fleet carriers and provided with prominent island structures. This new trend in design is continued on the Taiho. Moreover, the Japanese have for the first time installed a full-length flight deck that joins the hull at bow and stern. This reversal in naval style creates a dangerous recognition problem. Lacking most Jap CV characteristics, the Taiho has a strong resemblance to Allied carriers, particularly those of Britain's Illustrious Class.

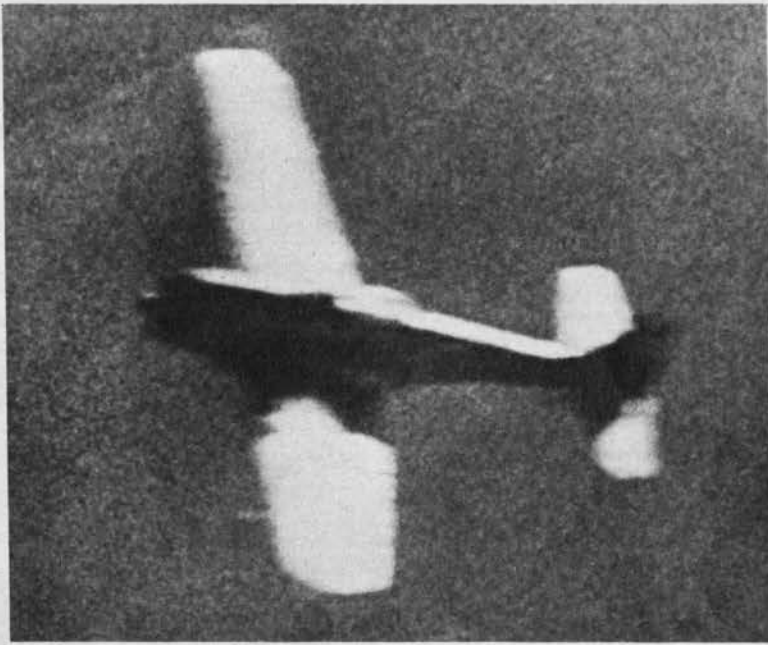


Beveled fantail is typical Jap feature retained by Taiho. Cantilever island sprouts from beneath flight deck and leans away from ship's side.

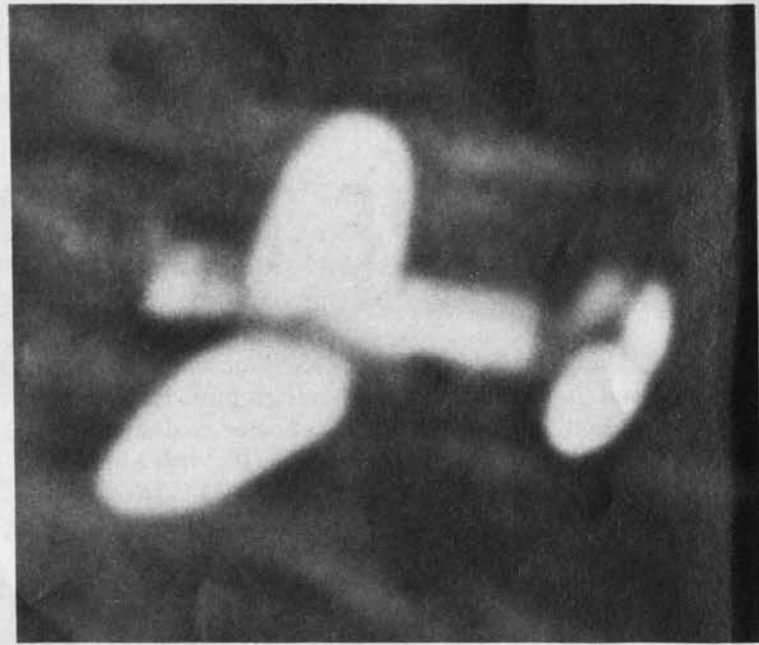


British Illustrious Class strongly resembles the Taiho in profile. The chief differences are the longer and more substantial British island,

which rises vertically from the deck, cruiser stern and pronounced overhang at bow. Illustrious Class ships are 140 feet shorter than Taiho.



Unidentified Jap fighter, possibly Frank, has a round, heavy nose to house big engine. Wing and tailplane are broad, square-cut; its rudder has a vertical trailing edge. Frank's span is about 37 ft., length, 32 ft.



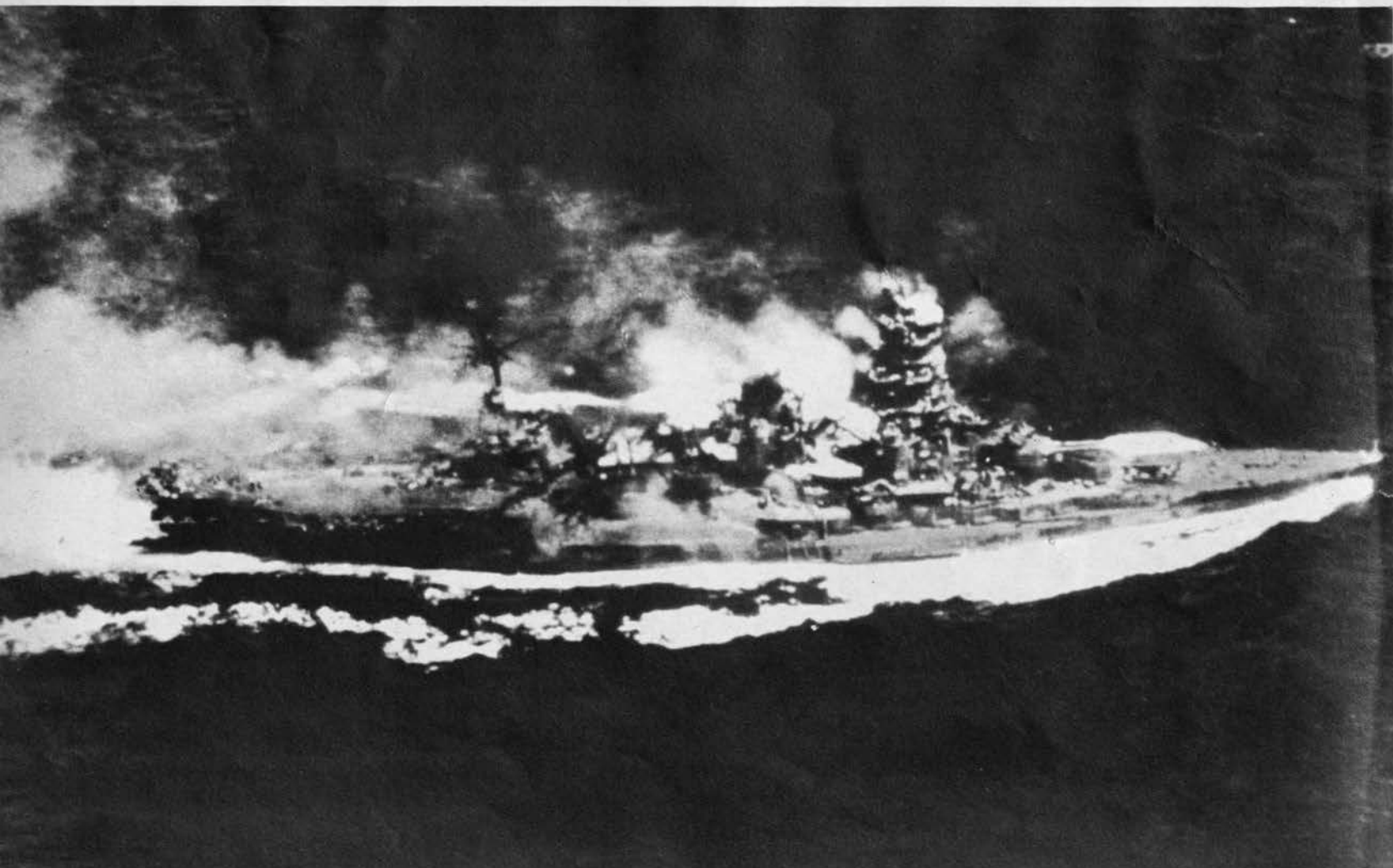
Grace 11 appears to have a round-tipped gull wing which is set low on its short, thick fuselage. Fin and rudder is set well forward over the elliptical tailplane. Grace's top speed is estimated to be 345 m.p.h.

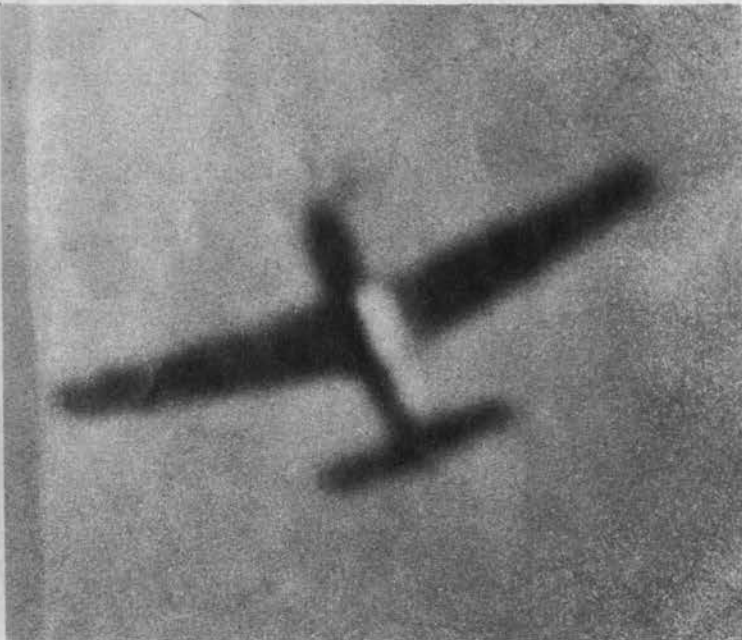
FIRST PICTURES OF JAPS' NEW WEAPONS

In an all-out effort to halt Allied power, Japan has been busy restocking her deficient armory with new warships and warplanes. Now our combat cameras have recorded clear graphic evidence to confirm and correct the vague reports previously received from the Pacific on four important aircraft and two battleships.

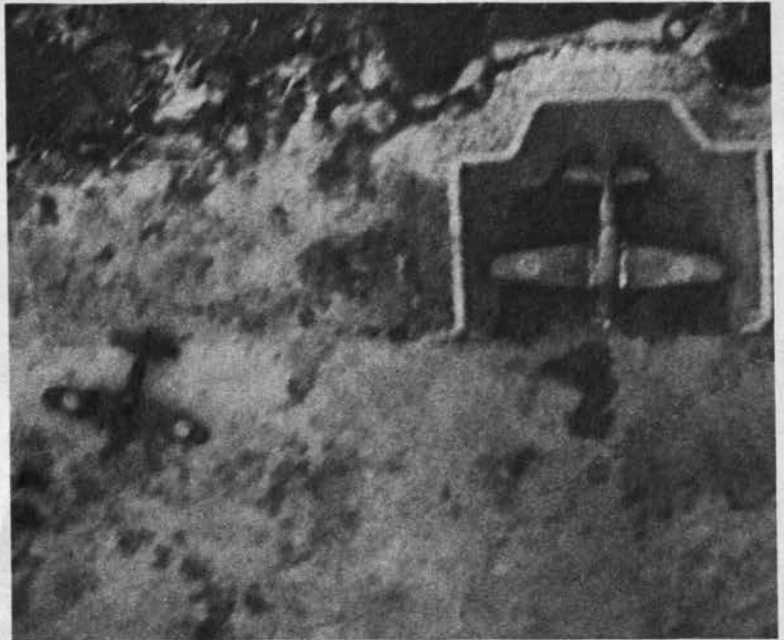
The first plane shown above may be Frank though identification is not yet certain. The second two are presumed to be Grace and Rob which heretofore have existed only as names in our Intelli-

ISE CLASS BATTLESHIP-CARRIER IS HEAVILY ATTACKED OFF NORTHERN LUZON. TWO AFTER TURRETS HAVE BEEN REPLACED BY 180-FT. FLIGHT DECK





Rob 1 has an unusually thin wing of great span, tapering sharply on the trailing edge. Tandem arrangement of liquid-cooled power plant gives it a very long pointed nose. Rob may be a replacement for Tony.



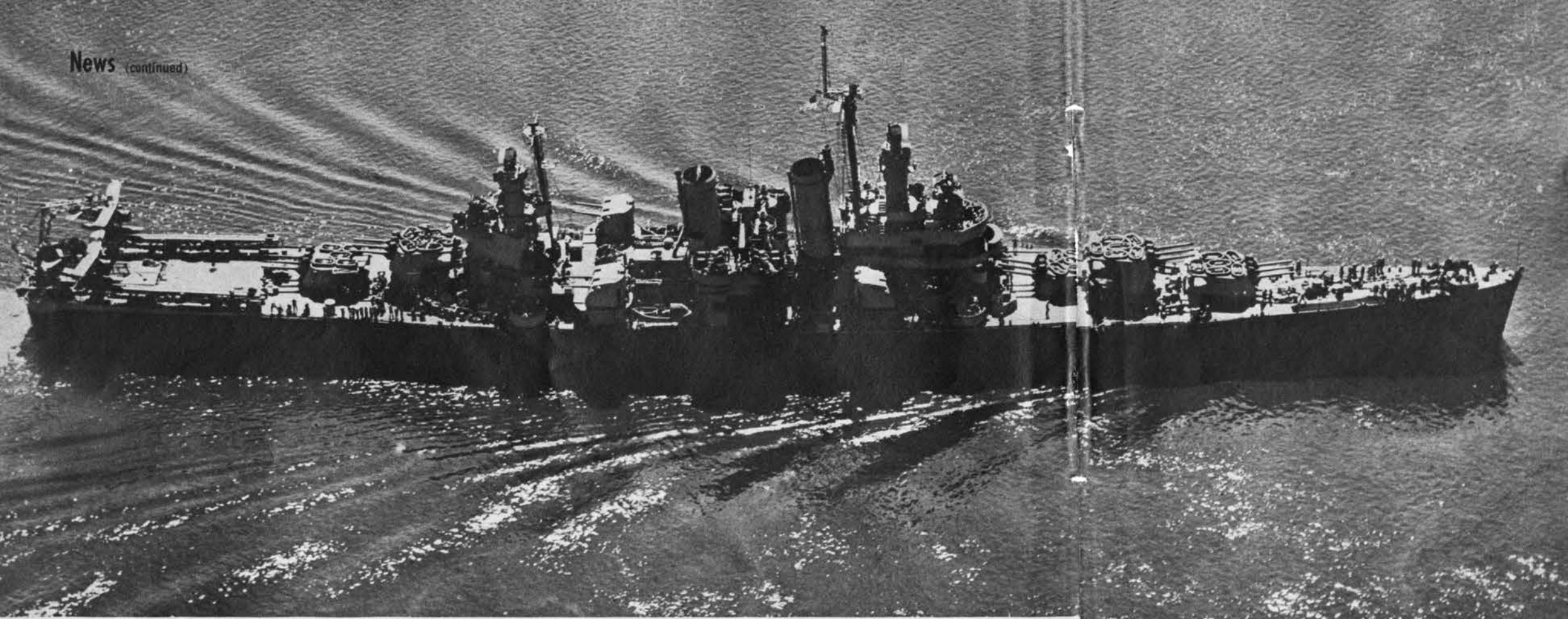
Jack and Jill (latter in revetment) are shown in airfield reconnaissance picture. Short-range interceptor Jack has a compact and stubby appearance. Barrel-shaped forward, the short fuselage tapers to pointed tail.

gence summaries. Little is known about carrier-borne torpedo-bomber Grace or Army fighter Rob. But Frank may be one of the most dangerous fighters yet developed by Japan. Possibly an Army replacement for Oscar in the China-Burma-India theater, it is reported to have a top speed of 422 m.p.h. and a service ceiling of 39,000 feet. It can climb to 30,000 feet in 9.8 minutes. The new fighter has some armor protection for the pilot and carries two 20-mm. cannon and two 12.7 machine guns for armament. At

top right is the first distinct photograph of the Navy fighter Jack. Pictures taken at the height of the Philippine Sea battle show in detail the Yamato Class (*below right*), Japan's most modern and powerful battleships. Also photographed off Luzon was the hybrid warship which the Japs have created by grafting a flight deck onto the stern of ships of the Ise Class (*below left*). Known as BB-XCV's, the Ises are believed to carry 18 aircraft which take off with the aid of catapults and which presumably cannot land on the brief deck.

BOMBS BURST NEAR FORWARD TURRET OF YAMATO CLASS BB. NOTE SUPERFIRING TRIPLE SECONDARY, SINGLE STACK JUST FORWARD OF MAINMAST





ANTIAIRCRAFT FIREPOWER OF ONE UNIT OF THE BROOKLYN CLASS HAS BEEN CONCENTRATED IN FOUR TWIN 5-IN. DUAL-PURPOSE MOUNTS, TWO PLACED ATHWARTSHIPS JUST AFT OF TOWER, TWO JUST FORWARD OF MAINMAST

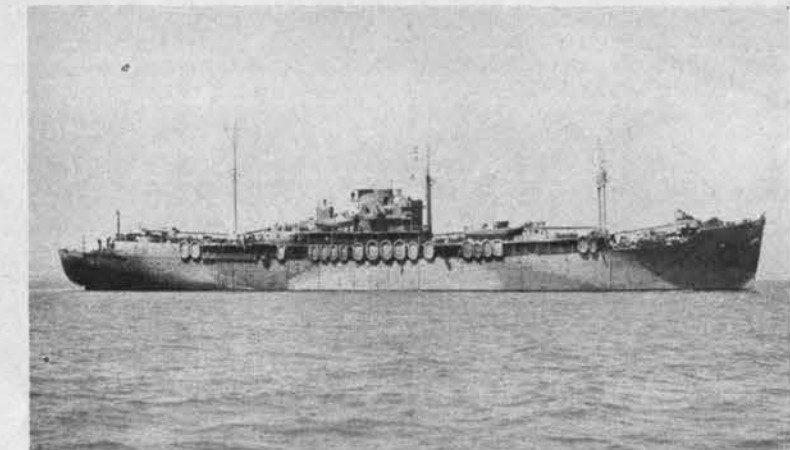
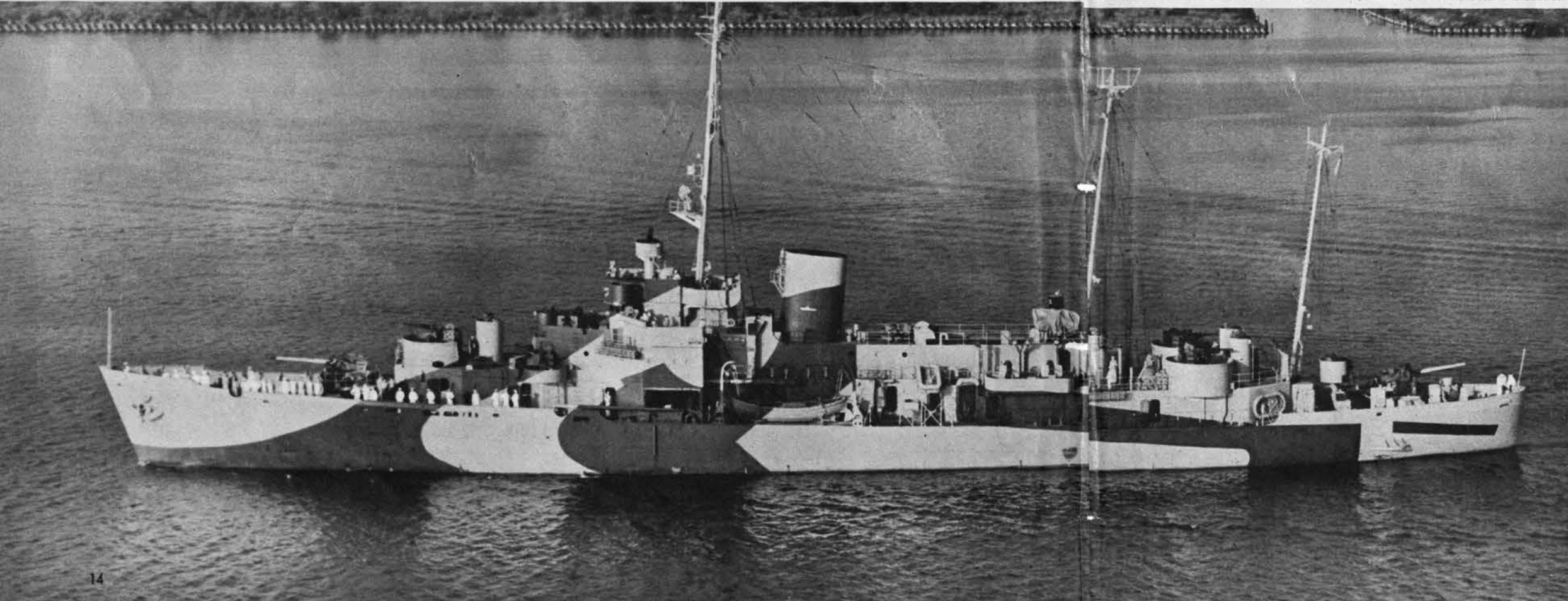
THE NAVY IS STILL IMPROVING ITS SHIPS

The six ships portrayed on these pages illustrate a valuable and continued policy of the U. S. Navy: the supplementing of new construction by the adaptation of battle-tested hulls to duties created by our far-ranging sea war. None of these changes is a major modification but each is of recognitional importance, each supplies an appearance variation on the major theme of our standard warship classes.

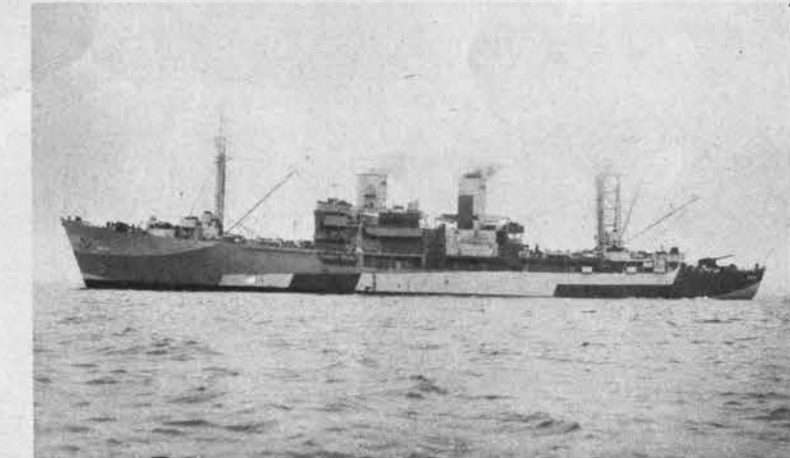
One ship of the important Brooklyn light cruiser class has now

acquired a greater concentration of AA fire in four raised dual-purpose mounts. The new Maritime Commission S-4 hull is in use both as an AKA (*illustrated*) and APA. Chief differences are the AKA's trestle mainmast and the APA's raised poop. Most interesting of the small-ship changes is the adaptation of the standard DE hull for use as a high-speed transport. This change parallels the earlier adaptation of World War I flush-deck destroyers to carry assault troops in fast-striking raids on small enemy bases.

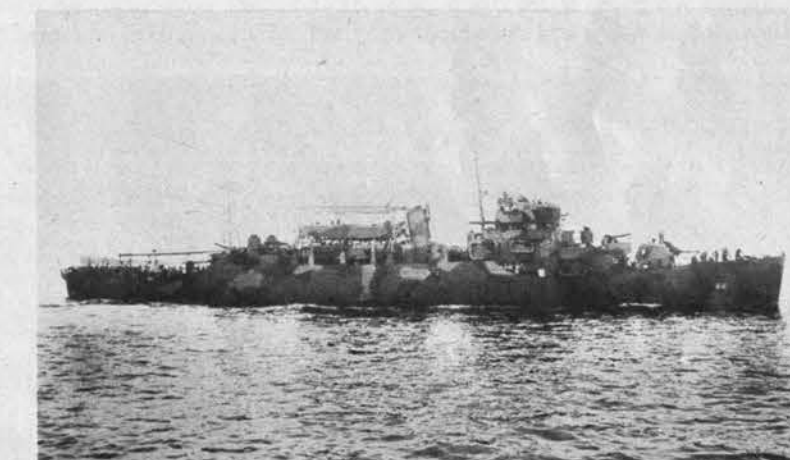
COMMANDERS OF AMPHIBIOUS COAST GUARD UNITS NOW RIDE INTO ACTION IN BIG CUTTERS ADAPTED AS FLAGSHIPS. THE CAMPBELL CLASS SHIP BELOW HAS A GREATLY EXTENDED DECKHOUSE, REDUCED ARMAMENT FORWARD



Griffin Class sub-tenders now have deckhouse extended forward to the forecabin. New stack cap projects aft over searchlight platform.



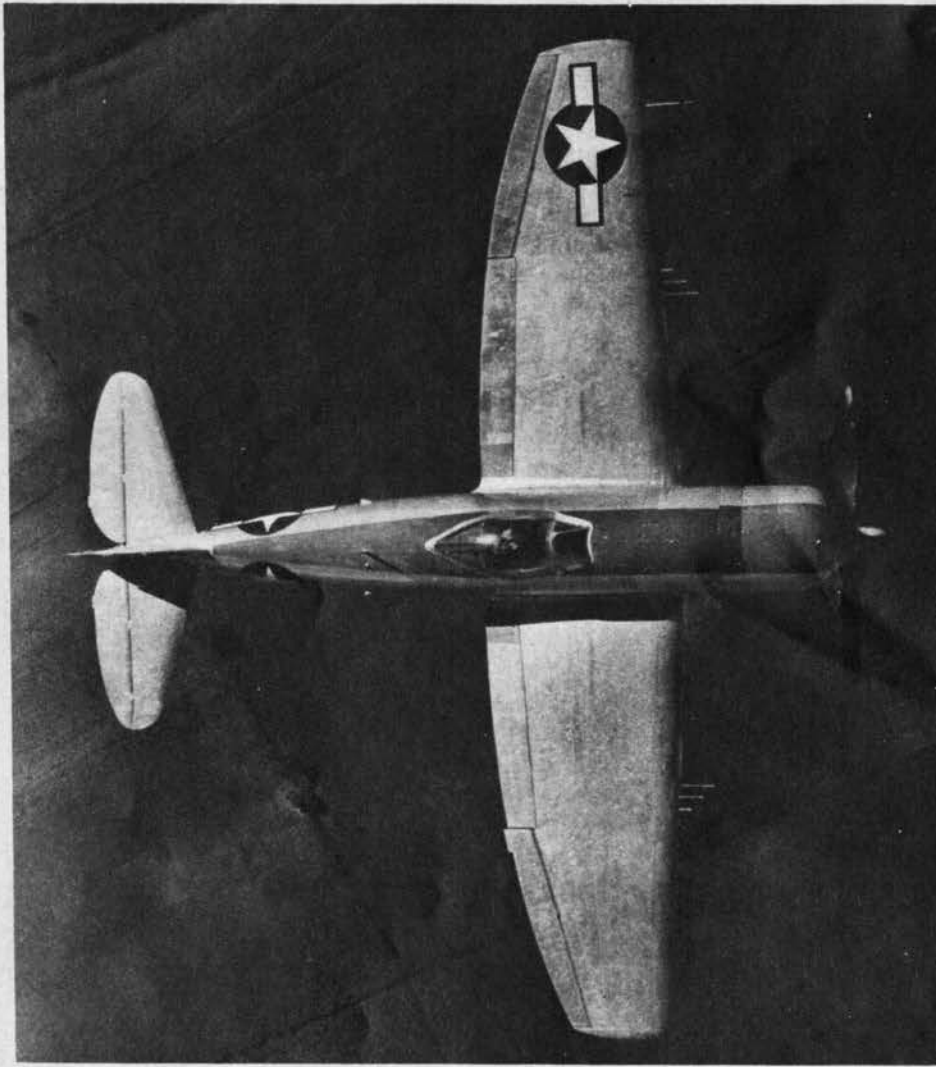
New Maritime Commission AKA carries four LCVP's in davits amidships, can be distinguished from APA's by trestle mainmast, low stern.



Rudderow Class DE's are being converted into APD's by adding davits for LCVP's abaft stack. Enclosed gunhouse forward has been kept.



Admirable Class AM's are variants on 180-ft. PCE. Note wind baffles on bridge, tiny streamlined stack, depth charge and paravane gear aft.



THUNDERBOLT SQUARES OFF

Already one of the war's great fighter planes, the USAAF's big P-47 has been modified to give it still greater speed and range. A new engine and improved supercharger have been installed; the wing has been redesigned.

A glance at this latest Thunderbolt, P-47N, should immediately show students of recognition that the wingtips are now blunt and raked, rather than rounded as before. This modification has not, however, been achieved by cutting the span of an existing wing as in the cases of Zeke 32 (ex-Hamp) and several marks of the Spitfire. The new wing actually has a 21-inch greater span than the old one, is now 42 feet, six inches. With space for extra fuel tanks, it substantially increases the range of the P-47, so much so that development of another long-range fighter for Pacific escort missions has been abandoned.

The changes which have been made in supercharger and power plant do not alter the new Thunderbolt's appearance. They do, however, make it the fastest P-47 to reach full production. Used both as a fighter and fighter-bomber, it should prove an effective counter to Japanese attempts to gain air supremacy in the Pacific.

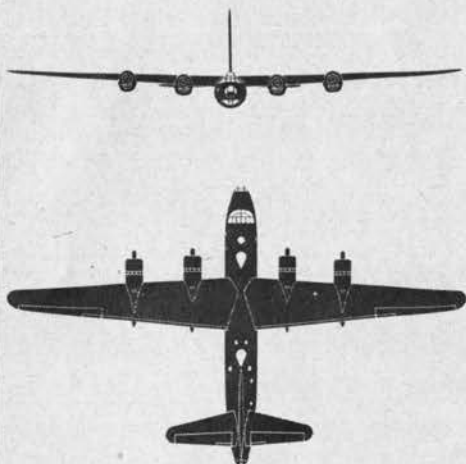
Clipped wingtips on the P-47N are blunt and raked, not sharply squared-off. The full-view canopy, which was introduced with the P-47D, is standard on newer Thunderbolts.



Tall tail and the smooth, tubular fuselage help identify the Thunderbolt. Graceful ellipse of the wing's trailing edge is unbroken despite

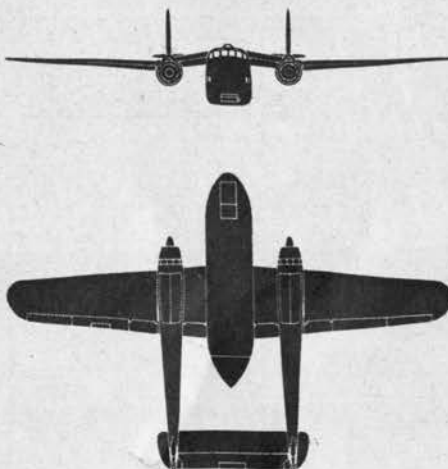
the illusion given by the aileron trim tab (see also above). The blunted wingtip should improve the Thunderbolt's performance at low altitudes.

NEW AND REVISED AIRPLANE SILHOUETTES



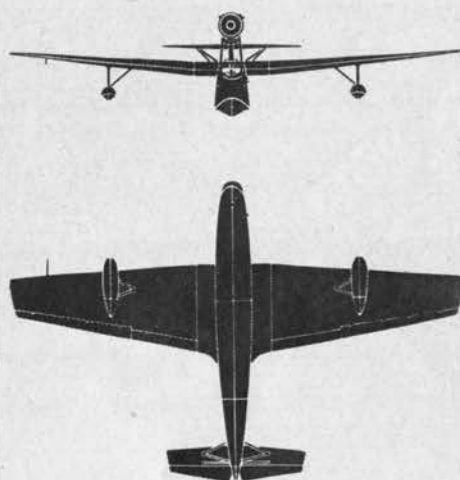
B-32

SPAN 135 FT. LENGTH 82 FT. 11 IN.
DOMINATOR IS AAF'S SECOND SUPERBOMBER



C-82

SPAN 106 FT. LENGTH 76 FT. 2 IN.
ARMY'S NEW CARGO CARRIER (PROVISIONAL)



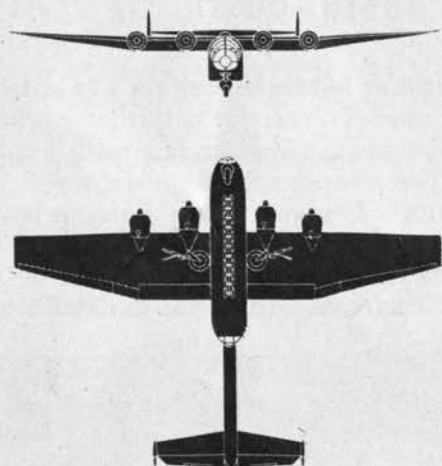
MBR-2

SPAN 59 FT. LENGTH 41 FT.
RED NAVY'S SINGLE-ENGINE FLYING BOAT



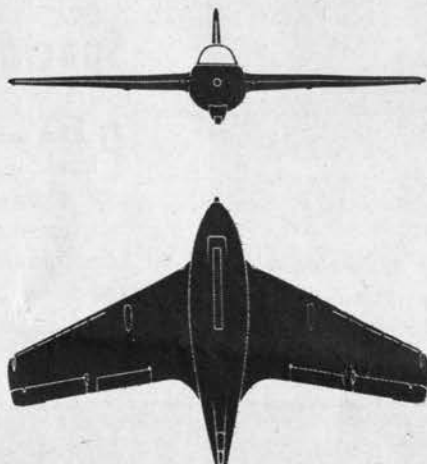
Second big threat to the Japanese mainland will be the big Consolidated-Vultee Dominator. Though the overall appearance is quite different from that of the Liberator, the heavy fuselage and

thin Davis wing are still in evidence. Twin booms and huge gondola distinguish the C-82, a heavy long-range U. S. cargo plane. The MBR-2 is one of the Russian Navy's reconnaissance planes.



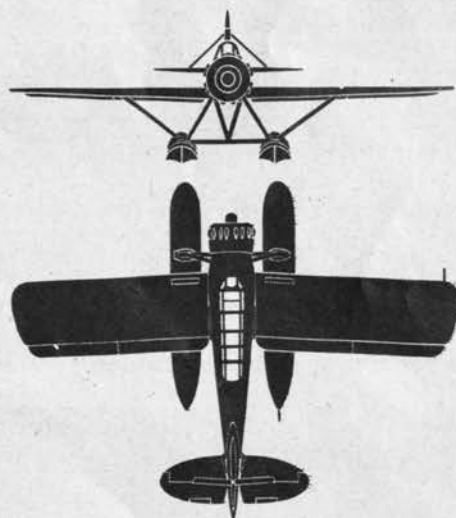
AR-232

SPAN 105 FT. LENGTH 77 FT.
NEW GERMAN FREIGHT-CARRYING TRANSPORT



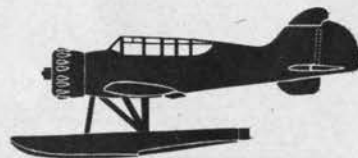
ME-163B

SPAN 30 FT. 3 IN. LENGTH 19 FT. 6 IN.
NEW VERSION OF NAZI ROCKET FIGHTER



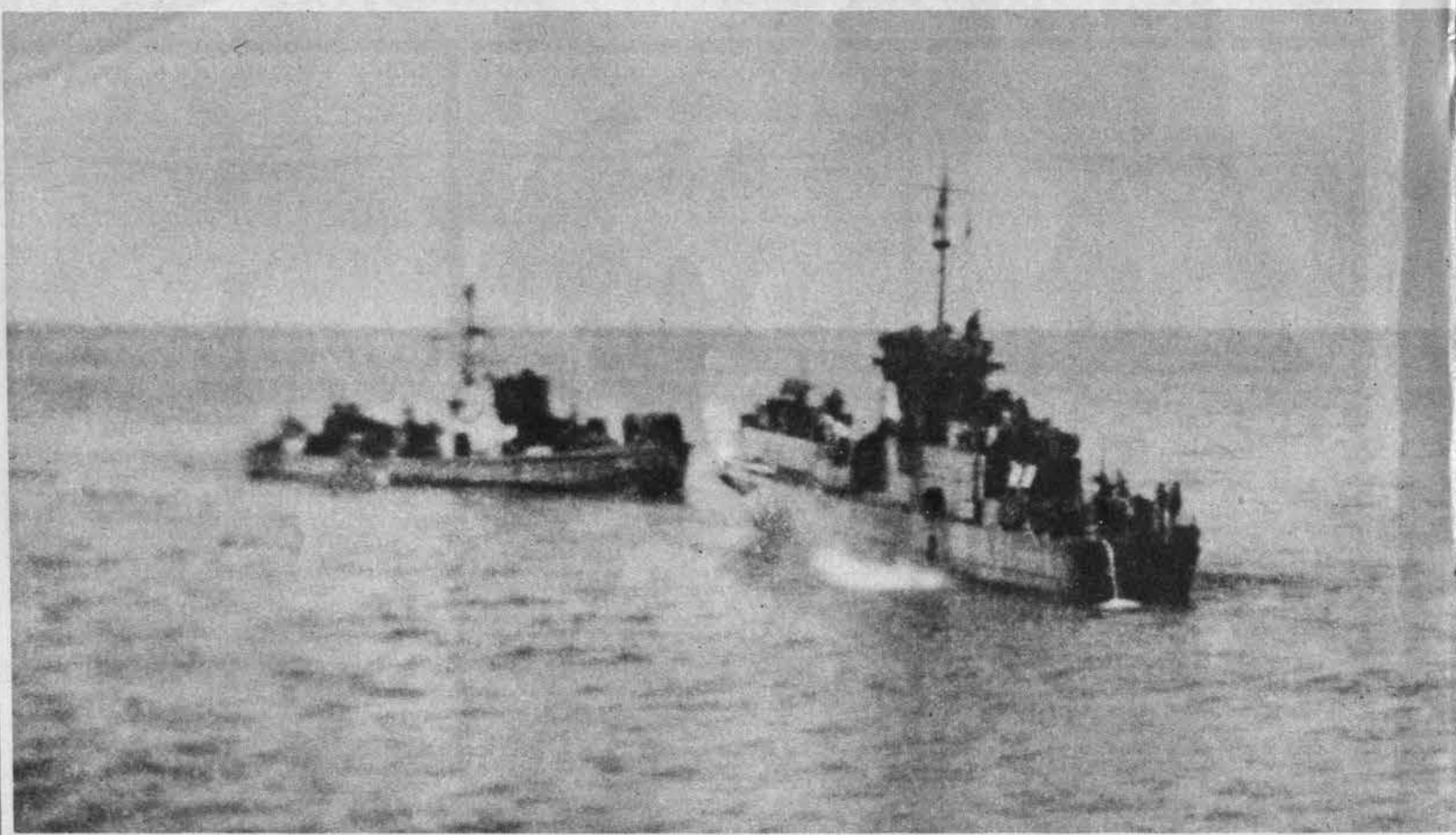
GLEN 11

SPAN 36 FT. LENGTH 28 FT.
SUBMARINE-BORNE JAPANESE FLOATPLANE

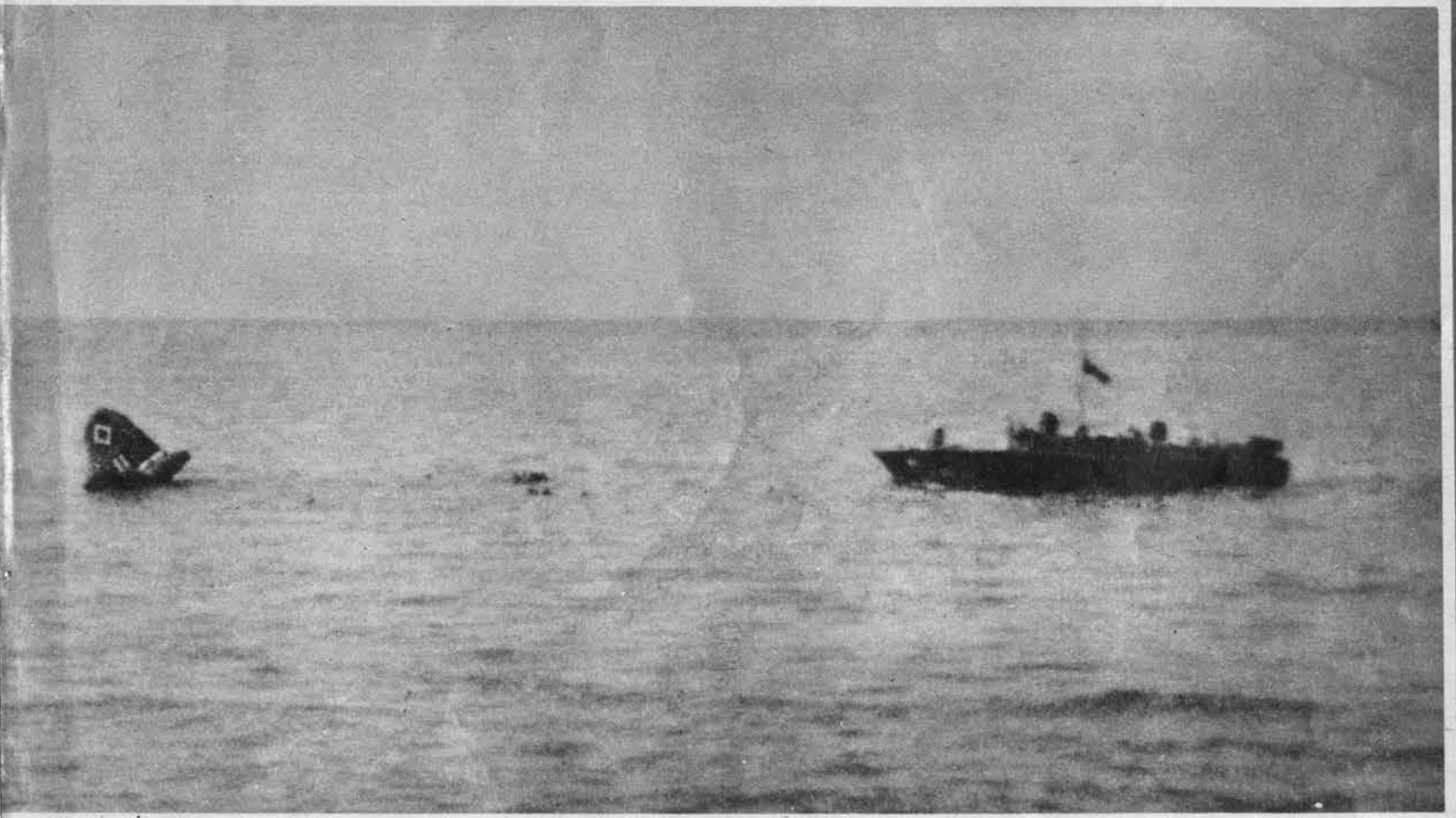


Latest Luftwaffe threat to Allied planes is the rocket-propelled Me-163B. It has been changed considerably from the earlier Me-163. The Arado-232 has a bulky gondola slung under a high wing

mounting four radial engines. Boom extends to twin fins and rudders. Carried on subs, Glen is possibly the Japanese plane which attacked the U. S. mainland in 1942 with one incendiary bomb.



DOWN OFF ANZIO, A B-17 SINKS INTO THE MEDITERRANEAN WITH ONLY ITS TAIL REMAINING ABOVE WATER. A U. S. MINESWEEPER AND LCI, TOGETHER



WITH A BRITISH 63-FT. AIR-SEA RESCUE LAUNCH (RIGHT) HAVE ARRIVED TO PICK UP THE AIR CREW STRUGGLING IN THE WATER (RIGHT CENTER)

SMALL CRAFT

Specially designed small boats cut

Planes are expendable but their crews are not. Justifiable on humanitarian grounds alone, this is further upheld by the cold logic of war; training an airman is a costly business requiring so much time and effort that his conservation becomes of prime importance. Moreover, a flier's morale is boosted by the knowledge that if he is shot down his friends will make every possible effort to save him from death and the enemy. Since most air operations in this war have taken place at

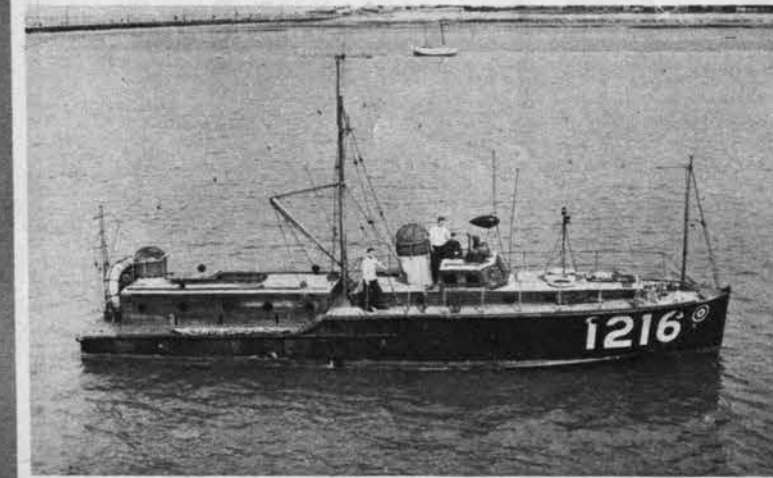
RESCUE FLIERS

air-crew losses in overwater flights

least partly over water, this has become largely a maritime matter carried out by the team of patrol plane and rescue boat. Planes flying rescue missions look the same as at any other time, but rescue launches create a knotty recognition problem. Germany employed all kinds of coastal types for this work, but the Allies have developed special air-sea rescue craft. Like all small boats, they are hard to recognize, but the flier should study them carefully, since their sole purpose is to save his life.



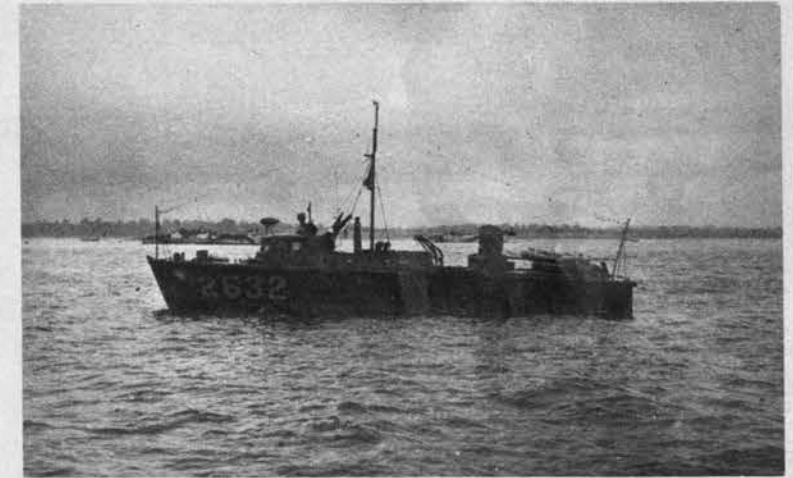
Sharp clipper bows mark most British air-sea rescue launches. This 73-ft. type has a low sturdy cabin stepped down aft, with a prominent gun mount near stern. Range is nearly 600 miles, and speed 22 knots.



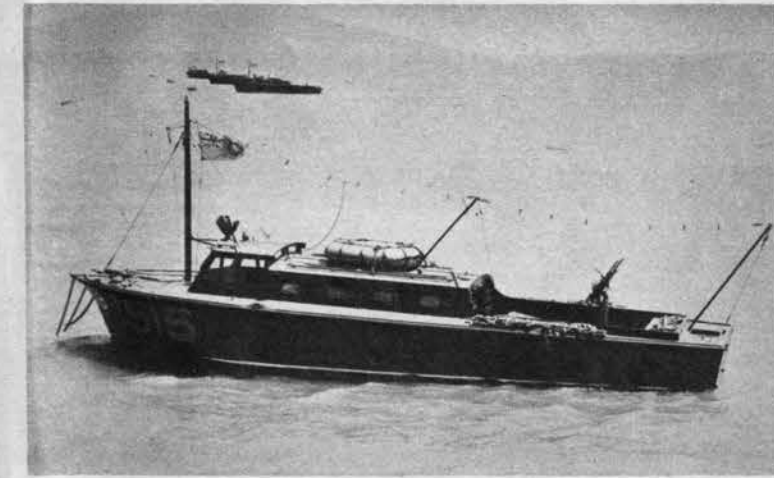
RAF Pinnace has a low cabin, and deckhouse aft of deckline break. Originally a torpedo-recovery launch, the 60-ft. Pinnace is relatively slow and used for long-range rescue. Note domes of two MG turrets.



Large, stacked type is 110-ft. Fairmile subchaser, converted for long-range rescue missions and called RML (rescue motor launch). It has a low stack and bridge, with prominent deckhouse aft enclosing sick bay.



Low cabin structure of 67-ft. launch is typical of the present British air-sea rescue craft. Another version of this type may carry an open-mount Oerlikon gun in place of prominent twin machine-gun turret aft.



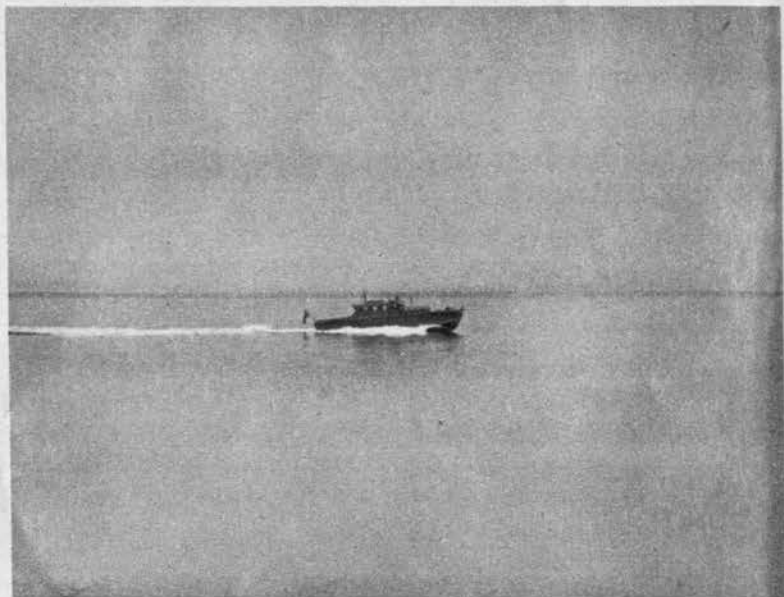
Class A seaplane tender is only 41 feet in length and is intended to operate close offshore. Very low and simple in outline, this launch has a large deck-well in the stern. The machine-gun mount aft is optional.



U.S. Lend-Lease supplies Britain with this 63-ft. high-speed launch. It has a long, low streamlined cabin and two machine-gun turrets. Undulant deckline is high, sheer forward, drops to pointed clipper bow.



Shallow draft fits the 42-ft. picket boat for air-sea rescue in bays and harbors. Ample cabin, stepped down aft, makes it look like a peacetime pleasure craft. Cruising in friendly waters, it needs no armament.



Speed of over 30 knots makes 45-ft. type much faster than the 42-ft., and thus more efficient for emergency air-sea rescue in the same shallow inland waters. Note the high, single cabin structure, open at after end.



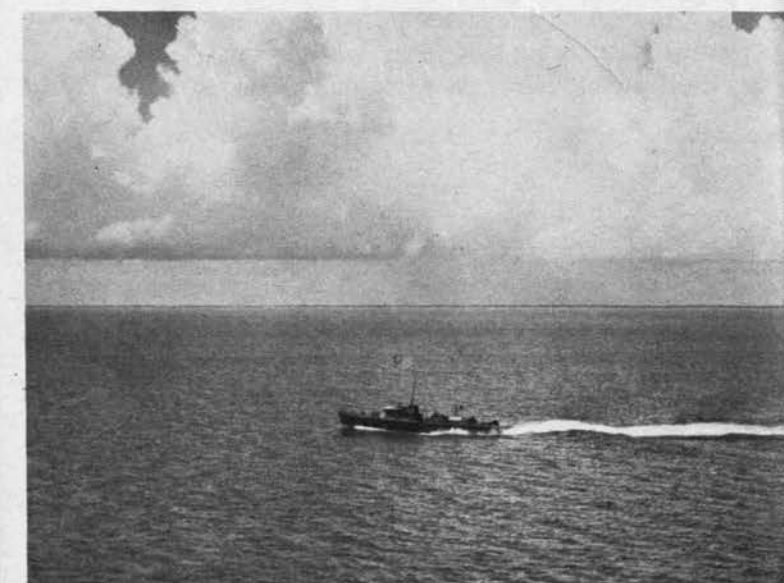
Shore-based 63-ft. boat can rush casualties in from open sea at more than 30 knots, while shallow draft permits speedy navigation of coastal waters near bases. It has low streamlined cabin, enclosed hatchway aft.



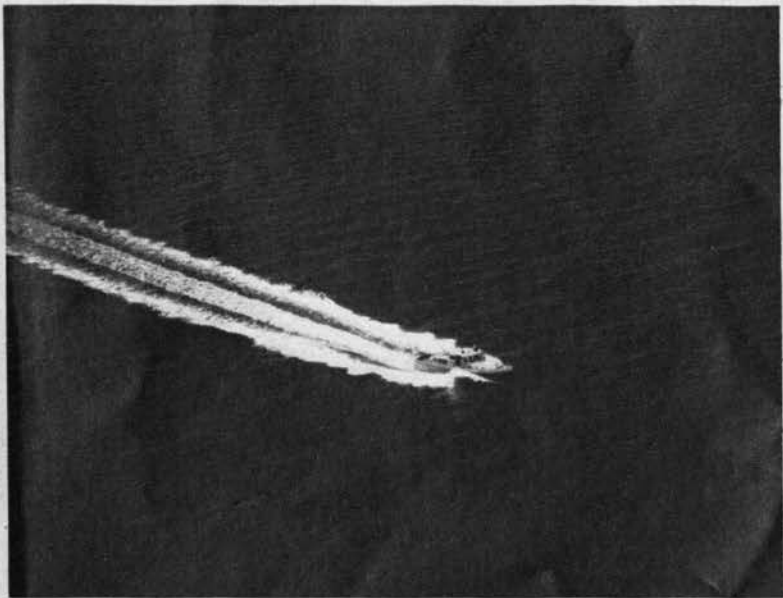
Most modern and effective of U. S. air-sea rescue craft is the 85-ft. picket boat. Trim and powerful in appearance, it relies on a high speed of 35 knots to bring air-crew casualties ashore as quickly as possible.



Casualty areas such as bomber routes are patrolled by the 104-ft. sea-going craft. They may be encountered 200-300 miles from land and have a completely equipped dispensary able to handle twelve casualties.



New 104-footer has a lower, more streamlined cabin than older craft (*left*). Used by the Army Air Forces, these larger vessels are designed to take care of their casualties at sea while on the way to shore hospitals.



A slow craft, the 42-footer does not leave a very turbulent wake. It has the stubby hull shape of a conventional motorboat. Both the 42-ft. and 45-ft. types are used for training purposes, as well as actual rescue work.



Head-on, the 45-ft. picket boat shows its smooth bullet shape and low forward cabin. This small coastal type carries very complete fire-fighting equipment, which is a unique feature on American air-sea rescue craft.



Elliptical hull, machine-gun position atop cabin and a large deck break at the stern mark the 63-ft. rescue boat. Sometimes employed as patrol vessels, the 63-footers may be seen as far as 250 miles out from land.



High-speed 85-footer has clean lines, rounded stern. Note the three round gun positions—two atop the low cabin each of which carry twin machine guns, and one in the deck-well equipped with 20-mm. cannon.

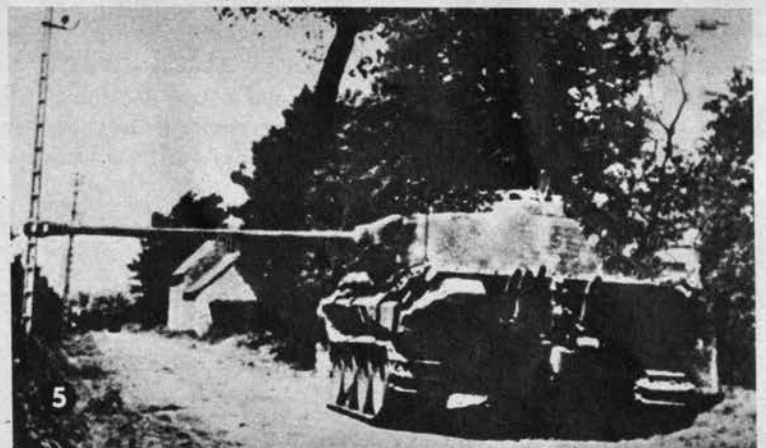


Prominent square cabin gives the old 104-ft. picket boat the appearance of a medium-sized coastal or fishing vessel. This large seagoing type has a cruising range of close to 700 miles and carries a crew of twelve men.



Less streamlined than the smaller picket boats, the new 104-ft. type is still a cleanly designed vessel. Note the ventilators and other gear on the afterdeck, also the U-shaped cabin with two round gun positions.

QUIZ NO. 2: ARMORED ATTACK & DEFENSE





PYRAMIDAL FORM OF U.S. SUPERSTRUCTURES IS SHOWN BY NEW ORLEANS CRUISERS, NEW MEXICO BATTLESHIPS AND MODERN FLETCHER DD'S

SHIP PATTERNS

Marked national traits in warship design aid recognition

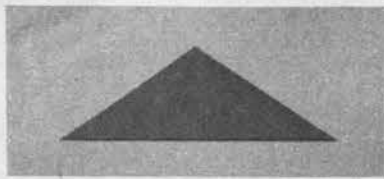
Every major sea power has a philosophy of naval architecture all its own. Among the nations of the world, sharp contrasts in geography, foreign policy, trade routes and national resources create naval problems which demand different answers both in strategy and ship design. Each navy stresses altogether different qualities and features when planning a battleship, cruiser or destroyer. Therefore national principles of design develop which, fortunately for recognition, are visibly expressed in the ships themselves.

The first thing in recognition is to tell friend from foe. With ships the only sure method is to know specific classes, but there is another aid in determining nationality. The navies of the U. S., Great Britain and Japan each have an individual style of construction that appears most clearly in their battleships but is repeated with variations in cruisers and destroyers. The U. S. tends to concentrate and streamline, piling up superstructure in clean pyramids. British ships are simple in design with many right angles, square surfaces and blocklike masses. Japanese designers scatter superstructure on a hull in isolated elements and

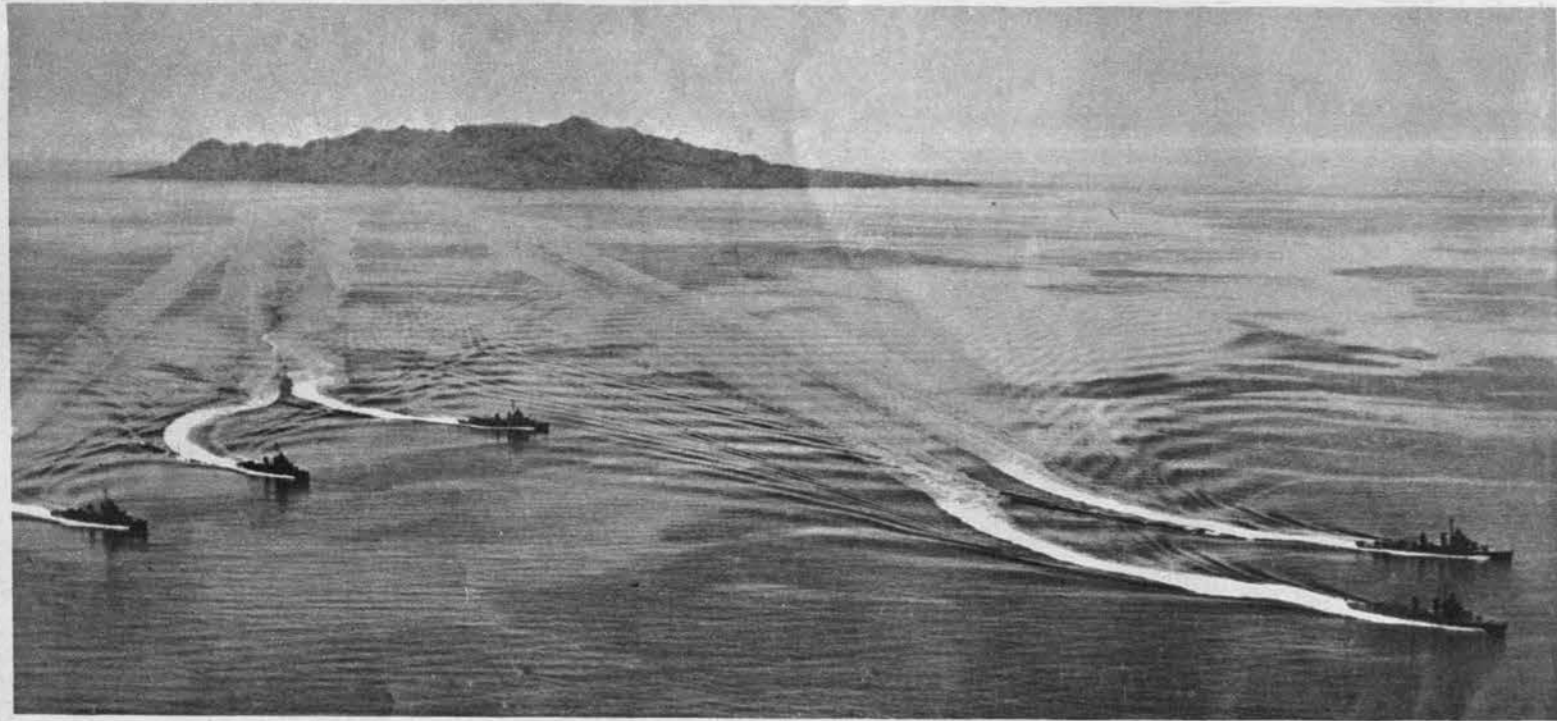
groups of elements which produce a separated, broken outline.

Second in importance to deciding nationality is distinguishing the type of vessel. In the U. S. fleet, a single pyramid indicates the battleship, split pyramid the cruiser, off-center pyramid the destroyer. With Britain and Japan the breakdown is not so simple. In these navies, a type may follow the national trend, but have certain features peculiar to itself. Japanese heavy cruisers, for example, have the irregular outline which says "Jap," but it is a congested central group of superstructure with heavy trunking on the forward stack that says "CA."

It must be remembered that this breakdown by nationality cannot replace the study of warships by classes. "Jap BB" is not an adequate reconnaissance report—a commander must know whether he has to deal with the powerful Yamato or an old Kongo class ship. Moreover, identification of the specific class sunk or damaged is vital to Intelligence. National characteristics can be used to introduce ship recognition or as a fresh approach to the problem. At sea it can serve when weather or distance blurs ship details, leaving the spotter only an impression of total form.



U. S. SUPERSTRUCTURES FORM TALL PYRAMIDS



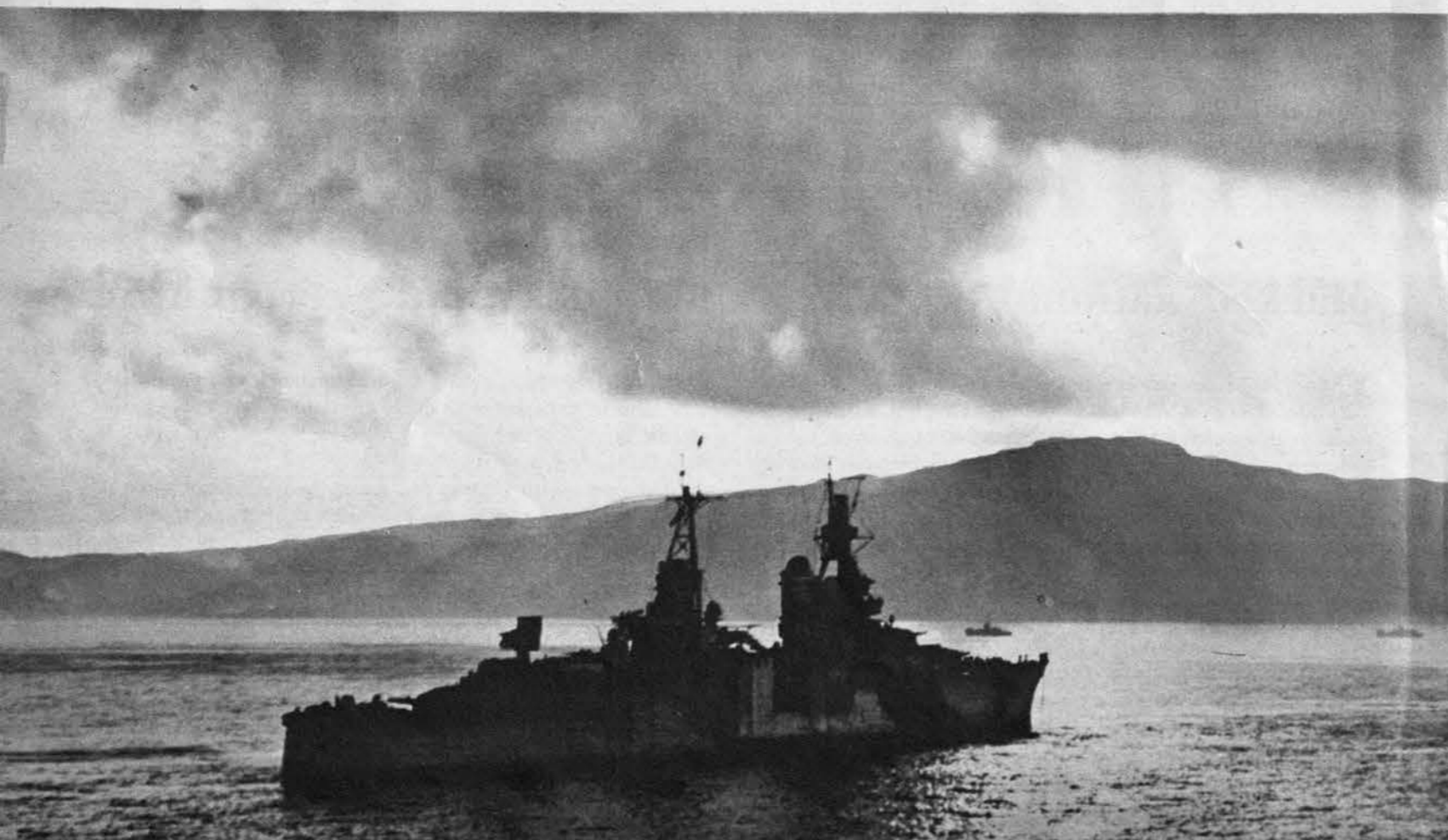
FORWARD PYRAMIDING of turrets and bridge is here exhibited from different angles by a destroyer squadron maneuvering off Savo Island.

Benson-Livermore ships suggest all U. S. DD's with abrupt slope forward, gentle slope aft, separate mound of superstructure near stern.

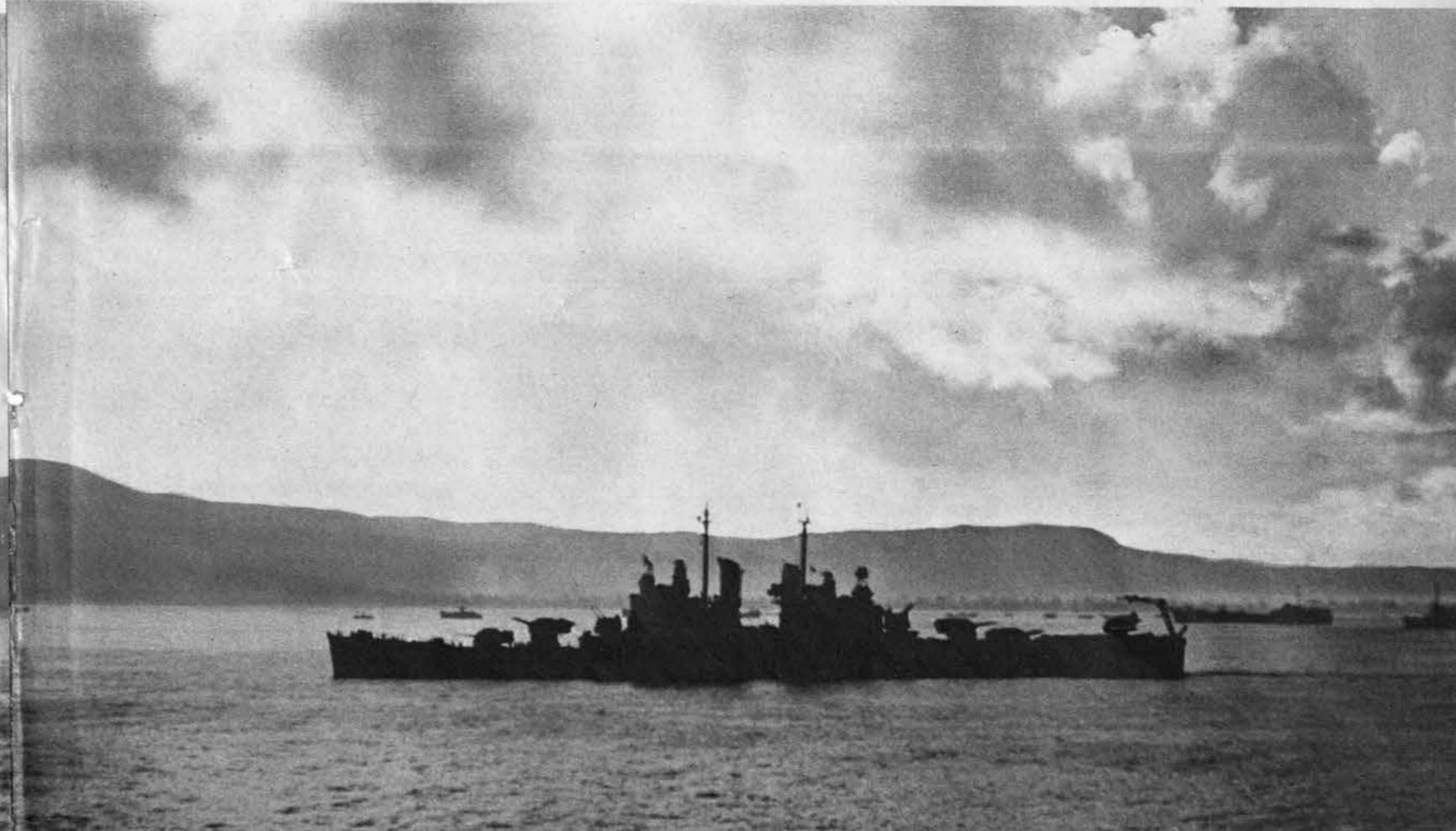


SINGLE, MOUNTAINOUS MASS of the South Dakotas culminates in lofty foretower, always the focal point of U. S. battleship design.

Beyond, the two-stacker Iowas also have triangular superstructure with foretower apex. Note the long, clear "battleship" sweep of their decks.



SATAVAN SUNSET SILHOUETTES DOUBLE PYRAMIDING FORE AND AFT WHICH MARKS U. S. CRUISER PORTLAND CLASS (LEFT) WITH ITS LOW, WIDELY



SPACED SUPERSTRUCTURE REPRESENTS OLDER CA CLASSES. CLEVELAND CL (RIGHT) HAS SYMMETRICAL, MODERN VERSION OF U. S. CRUISER PROFILE.

NATIONAL CHARACTERISTICS OF SHIP DESIGN

UNITED STATES: A PYRAMIDING OF THE SUPERSTRUCTURE ELEMENTS INTO CONCENTRATED, STREAMLINED MASSES

BB



SOUTH DAKOTA

CA



BALTIMORE

CL



CLEVELAND

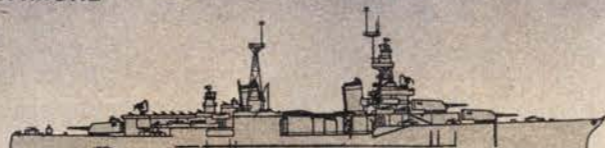
DD



FLETCHER



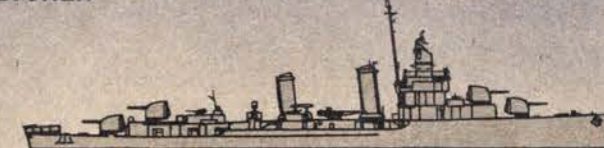
IOWA



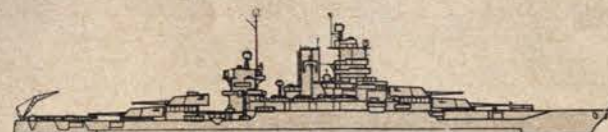
NORTHAMPTON



ATLANTA



BENSON-LIVERMORE



NEW MEXICO



PORTLAND



BROOKLYN



BENHAM-SIMS

GREAT BRITAIN: CLEAN, PROMINENT STACKS AND SQUARE BLOCKLIKE SUPERSTRUCTURE DEVOID OF STREAMLINING

BB



KING GEORGE V

CA



DEVONSHIRE-NORFOLK

CL

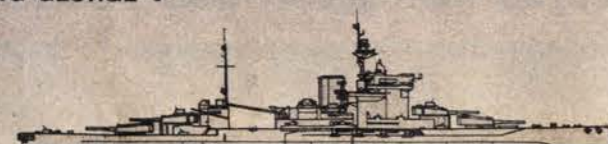


FIJI

DD



"O"-"W"



WARSPITE



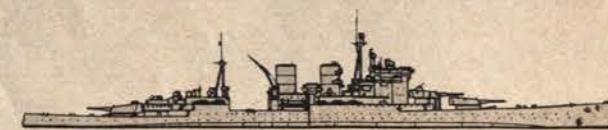
KENT



DIDO



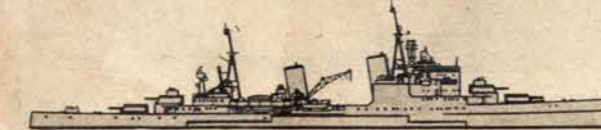
"L" AND "M"



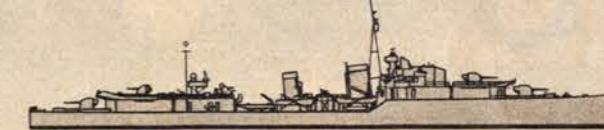
RENOWN



CUMBERLAND



SOUTHAMPTON



TRIBAL

JAPAN: GUNS, STACKS, MASTS AND SUPERSTRUCTURE SCATTERED IN DISTINCT, WIDELY SEPARATED ELEMENTS

BB



YAMASHIRO

CA



NACHI

CL

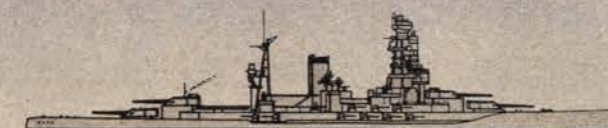


NATORI

DD



ASASHIO



NAGATO



ATAGO



KUMA



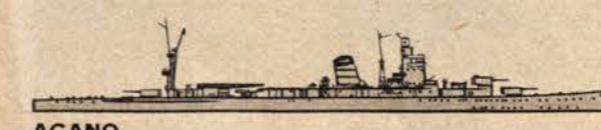
MUTSUKI



YAMATO



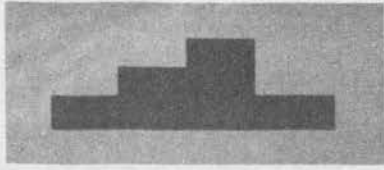
MOGAMI



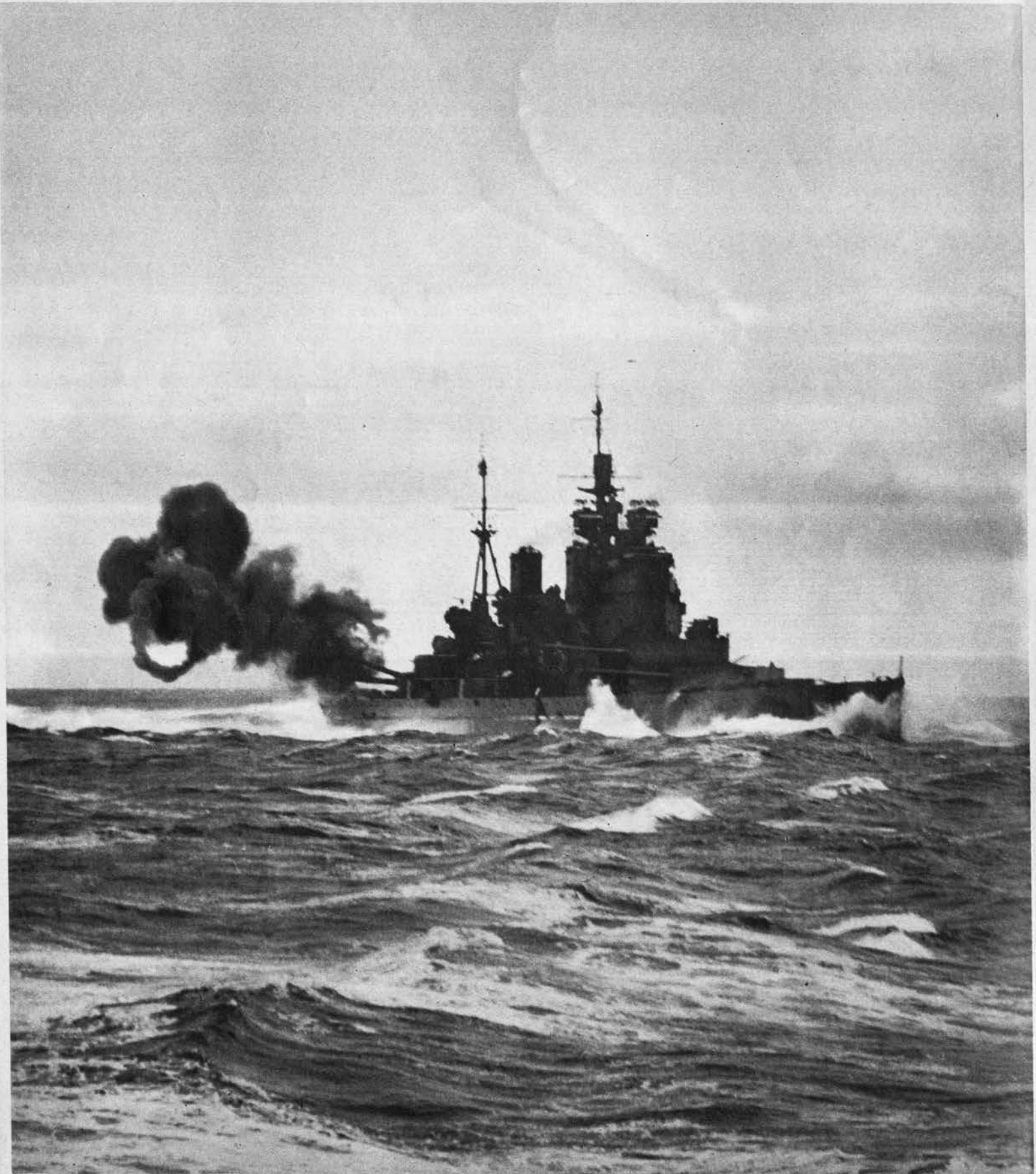
AGANO



TERUTSUKI

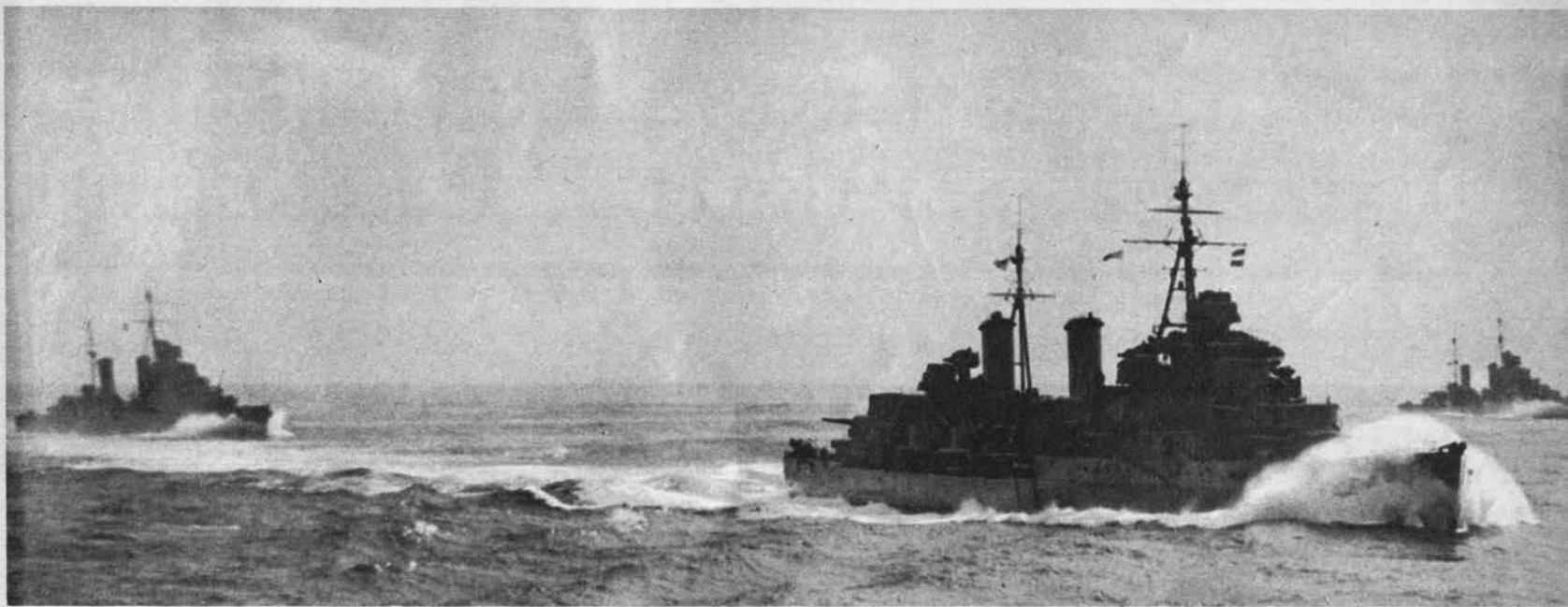


BRITISH ARE SQUARE AND BLOCKY IN FORM



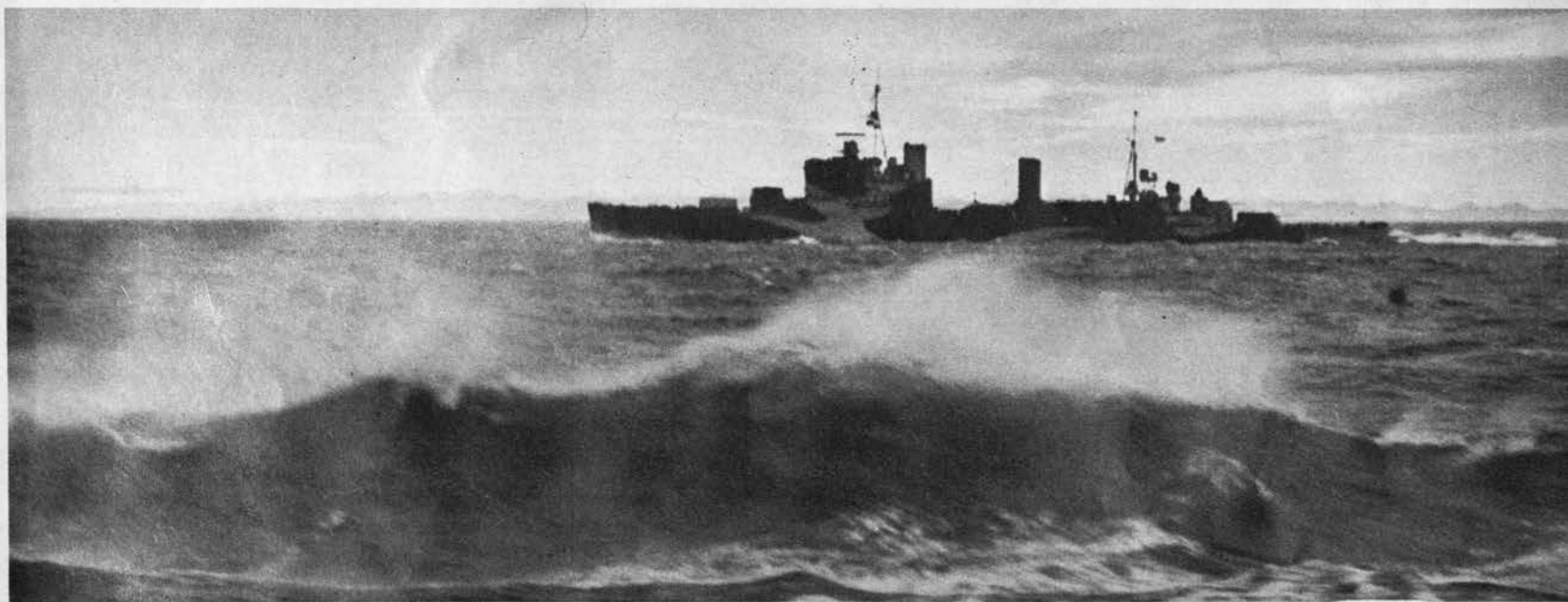
STIFF, UNCOMPROMISING LINES of the British warship are vividly illustrated by H.M.S. Duke of York butting ahead through moderate

seas. Square, solid mass of bridge structure is devoid of fancy streamlining, juts out at the top like the overhang on a frontier blockhouse.



CRUISER CONVOY ESCORT, made up of two Dido Class CL's led by an "Improved Southampton," shows the prominent stacks and light

masting typical of British design. Three tiers of turrets on Didos give same graceful incline to forward profile as U.S. superfiring armament.



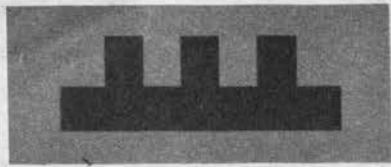
CUBELIKE MASS of her bridge and rectangular aircraft hangar, and heavy erect stacks give H.M.S. Jamaica silhouette of a row of blocks.

The location of plane-handling equipment between or abaft the stacks gives British battleships and cruisers a spacious superstructure break.

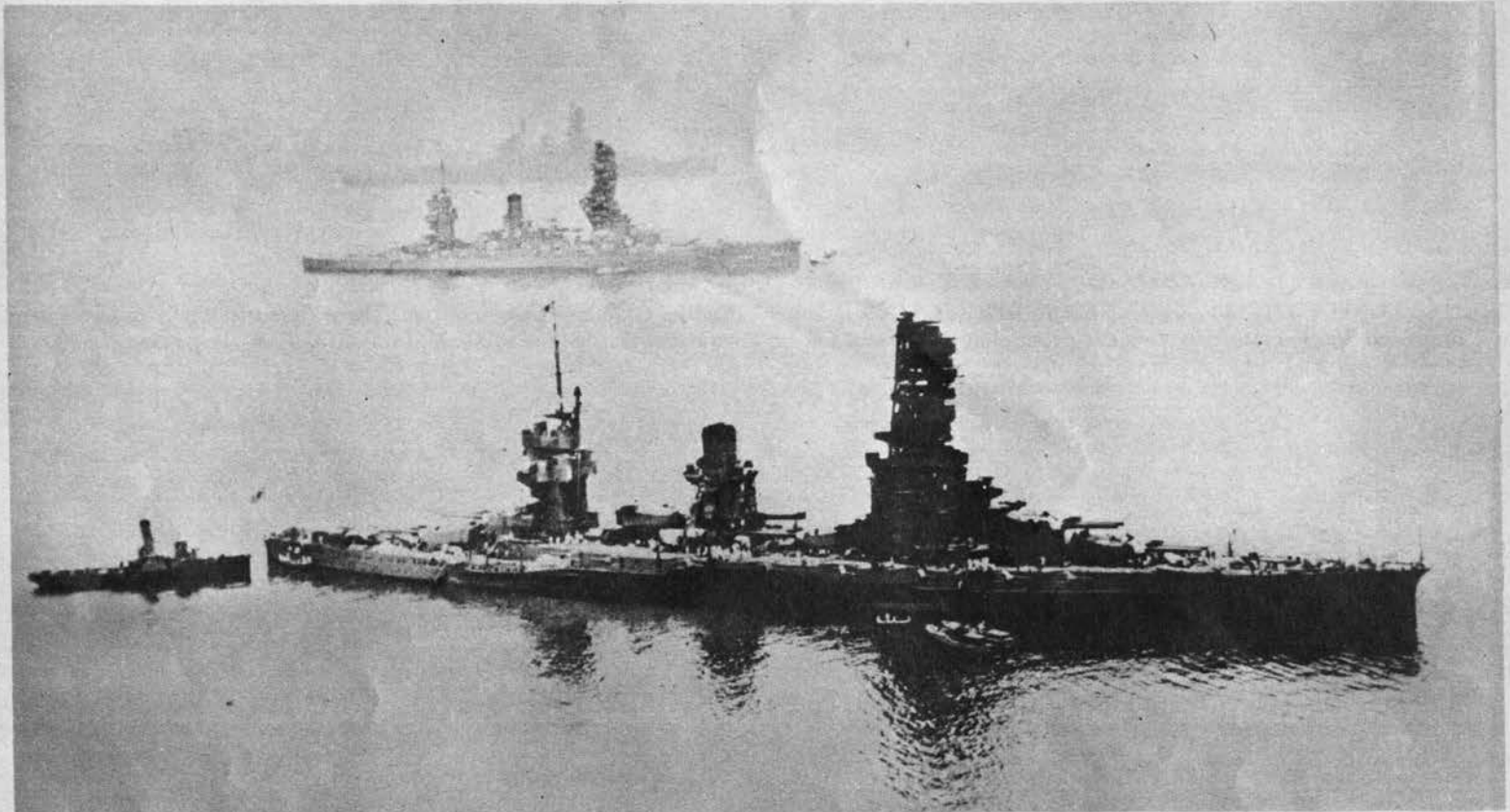


BRITISH DESTROYERS are low and stubby in profile. Superfiring turret and flash guard on "O" Class ship create a slope up to squat

square bridge. Afterdeck is cluttered. Queen Elizabeth BB's on the horizon show heavy stacks, block bridges and break in outline amidships.



JAPANESE PROFILES ARE SEPARATED, IRREGULAR



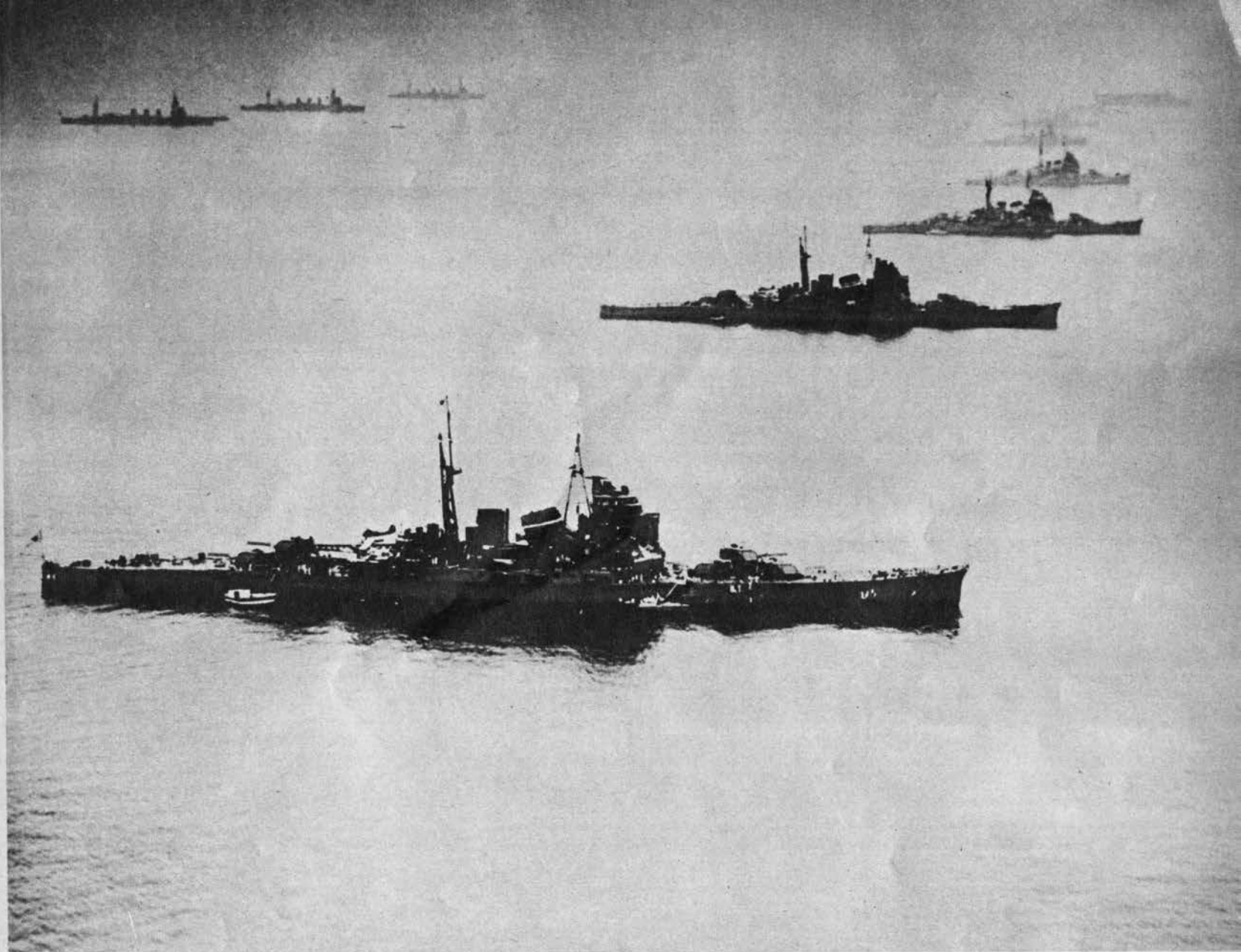
DISTINCT VERTICALS. uneven in height and usually three in number, make the Japanese BB easy to recognize. Top-heavy layers of huge

foremast tower, tall stack and control tower are typical features shown here by the late sisterships Yamashiro (*foreground*) and Fuso.



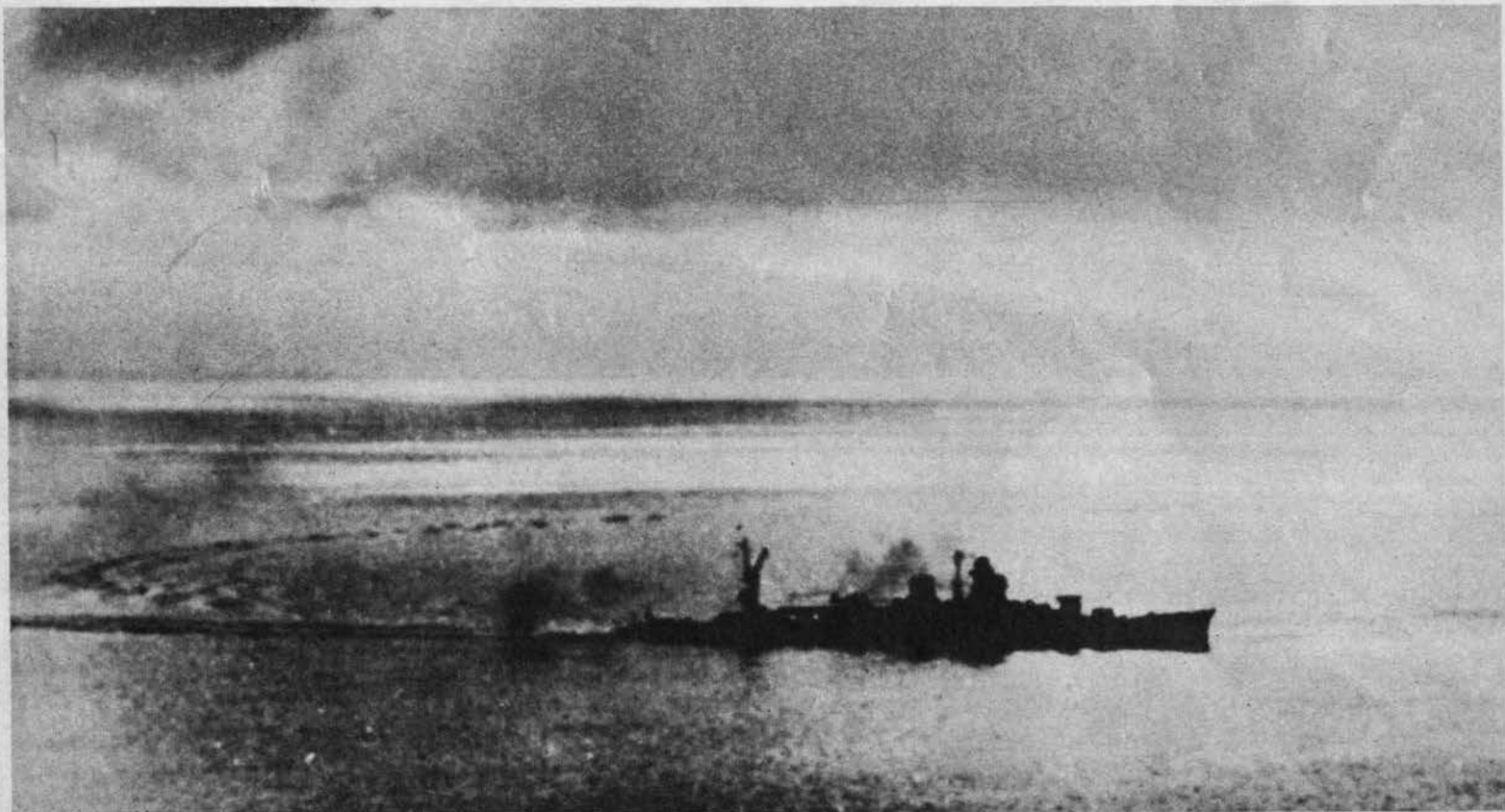
CLUTTERED UGLINESS of Jap DD's comes from superstructure elements rising abruptly from the hull. Vertical, box bridge is distinctly

separated from forward guns. On the older DD's, such as this Mutsumi Class, break for torpedo-tube-well emphasizes this separation.



TALL, SHEER BRIDGE like a fortress battlement denotes the Jap CA. Atago Class cruisers (*right*) have a lumpy outline created by jumbled

stacks, mainmast and isolated turret groups. On Kuma Class CL's (*upper left*) mainmast, foremast bridge and stacks form five clean elements.



DISPERSED ELEMENTS dominate superstructure of modern Agano Class light cruiser, though it lacks characteristic three stacks found

on older Jap CL's (*upper left in the top picture*). Agano has the high substantial mainmast found in some form on almost all Japanese warships.



Carrier-based Seafires provide fighter cover for big warships of the Royal Navy's battleline

BRITISH NAVAL AIR

ROYAL FLEET'S PLANES HAVE SEEN FIVE YEARS OF GRUELING WARFARE

First fleet to take carrier-based planes to war was Britain's Royal Navy. For over two years the Admiralty had under its control all of the world's fighting aircraft carriers except France's Béarn. During those two years, as well as the three since Pearl Harbor, British naval aviation has fought in all major war theaters. Working closely with its fleet, it has also supported the British Army and the RAF from Norway to Madagascar.

Remarkably enough, it was not until some three months before the outbreak of World War II that British naval aviation was organized on its present basis. Since 1924 it had existed as the Fleet Air Arm of the Royal Air Force, with most of the flying officers holding both Navy and RAF commissions. But the reorganization carried out in 1938-1939 gave the Admiralty complete control of all ship-based planes and established a line of demarcation between Navy and RAF which, with few exceptions, has clearly separated the functions of the two services. So thoroughly has the Navy absorbed its air force that the term Fleet Air Arm has recently been dropped.

All ship-based planes, but no others, are Navy-manned and Navy-operated. Unlike the U. S. and Japanese navies, the British Admiralty does not maintain shore bases except for training and repair. However, it attains operational flexibility by assigning all the missions flown by the RAF's Coastal Command. With regard to production and procurement, both the Admiralty and the RAF clear everything through the Ministry of Aircraft Production, and either service can request any type manufactured or bought by Great Britain.

With only seven fleet carriers—the Furious, three Illustrious Class ships, the Indomitable and two Implacables—British naval aviation is not designed for the large-scale carrier task force action characteristic of U. S. air-sea fighting. As a rule the Royal Navy's planes work with battle and convoy fleets as defensive fighters, gunnery spotters and scouts. Most British-operated escort carriers are U. S.-built Bogue and Long Islands while British shipyards are turning out carriers of an intermediate size still confidential in design.

When war broke out, the slow bombers and fighters of the British Navy were a far cry from the efficient planes in use today. The standard torpedo bomber was the Swordfish; the chief shipboard fighter was the Blackburn Skua with a maximum speed of 224 m.p.h. But with typical British doggedness and faith in flying ability, the fleet's air arm went to war long before its planes could match in speed and maneuver-

ability those of either the Luftwaffe or the Italian Regia Aeronautica. Until the German invasion of Norway, British naval air action was confined to routine patrol, gunnery spotting and fighter defense of Scapa Flow. With the outbreak of real fighting in the north, however, the carriers pitched in to give air support to Allied ground forces and attack German shipping. Flying in the dirtiest weather, British naval airmen bombed ground targets in many sectors and sank the German CL Königsberg at Bergen.

Swinging into the Mediterranean when Italy's big navy entered the war, the Royal Navy brought its carriers into narrow waters for their most critical test. Convoy after convoy was taken through to Malta and the Middle East as aircraft from the Ark Royal, Eagle, Indomitable and the entire Illustrious Class fought off determined attacks by German and Italian planes. Ironically enough, both the Ark and the Eagle were sunk by submarines. Though the Illustrious, Indomitable and Formidable were damaged by Nazi divebombing, they are still fighting today.

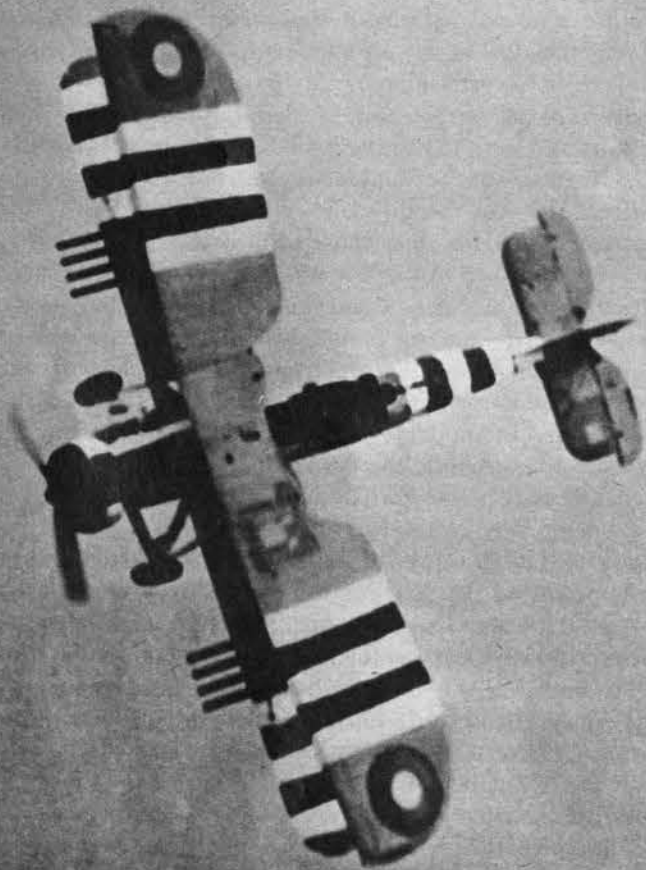
In offensive action British naval planes pounded targets all over the Mediterranean, on Sardinia, the Italian mainland and the Libyan coast. A strike at Bomba Bay in Libya once produced the startling result of four ships sunk by three torpedoes. The most brilliant coup staged by the Mediterranean Fleet was the famous night raid on Taranto in November, 1940 when 20 Swordfish from the Illustrious wrecked three battleships, at least two cruisers and two fleet auxiliaries. Weaving through streams of anti-aircraft fire, the slow but maneuverable biplanes completely upset the balance of naval power in the Mediterranean.

With the battle off Cape Matapan and the sinking of the Bismarck, the British demonstrated the tremendous advantage enjoyed by a naval power operating with carriers against one without. In amphibious and land operations, carrier-based planes have supported British forces in Syria, Iraq, East Africa and Madagascar, as well as in the great invasions of French North Africa and Italy. Even in Normandy, where carriers were not used, Navy Seafires sped across the Channel to spot targets for Allied armada's guns.

On H.M.S. Victorious, which operated with a U. S. Pacific task force in 1943, British naval fliers had a foretaste of their ultimate major objective, the drive against Japan. With the Seafire III, Firefly, Wildcat, Hellcat and Corsair II as fighters, the Barracuda and Avenger for dive and torpedo bombing and "Old Stringbags" out on antisubmarine patrol, the Royal Navy has a finely balanced air arm to support its Far Eastern surface forces.



Fifth Sea Lord, Vice-Admiral Denis W. Boyd, commanded the Illustrious off Taranto. He is at present the Admiralty's ranking air officer.



SWORDFISH Still in action, Swordfish were first given to the fleet in 1935. Shown here with D-day markings, they fly from CVE's, fight enemy submarines with rockets and depth charges.



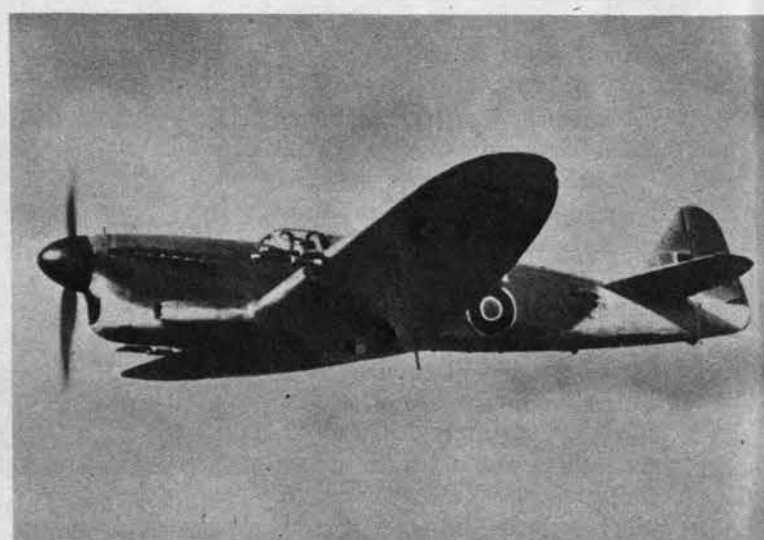
BARRACUDA Both a dive and torpedo bomber, the Fairey Barracuda has completely replaced Swordfish, Albacores and Skuas on Britain's fleet carriers. Successful actions have included

blasting the Tirpitz in its Norwegian lair and the Surabaya attack. The unusually high, braced tailplane, long greenhouse and high wing with very slight dihedral should make Barracuda very easy to recognize. Like

the Firefly and Seafire (below) the Barracuda has an inline engine. All three planes should, therefore, be studied for differences from Judy, the only carrier-based enemy plane with a liquid-cooled power plant.



FIREFLY Replacement for the Fulmar, the Firefly is a long-range fighter, reconnaissance plane and nightfighter. Head-on view shows one big and four small air intakes under the Rolls-Royce



Griffon engine. Four 20-mm. cannon make it the world's most heavily armed carrier-based fighter. A two-seater, it has a two-section greenhouse on the long, thin fuselage. Note angular lines of fin and rudder.



SEAFIRE Familiar elliptical wing stands out in shadow cast on the flight deck by a Seafire II taking off from H.M.S. Illustrious. An adaptation of the Spitfire V, this Seafire does not have the



pointed rudder of the later Spits. The Seafire III (right) has a similar tail. Its new features include a four-bladed propeller, a special folding wing and the semi-blister canopy found on Spitfires XII, XIV and 21.



HELLCAT U. S. Navy's top fighter plane is now serving with Royal Navy. Regardless of markings, the humped fuselage and the squared-off wing will immediately identify the plane as Allied.

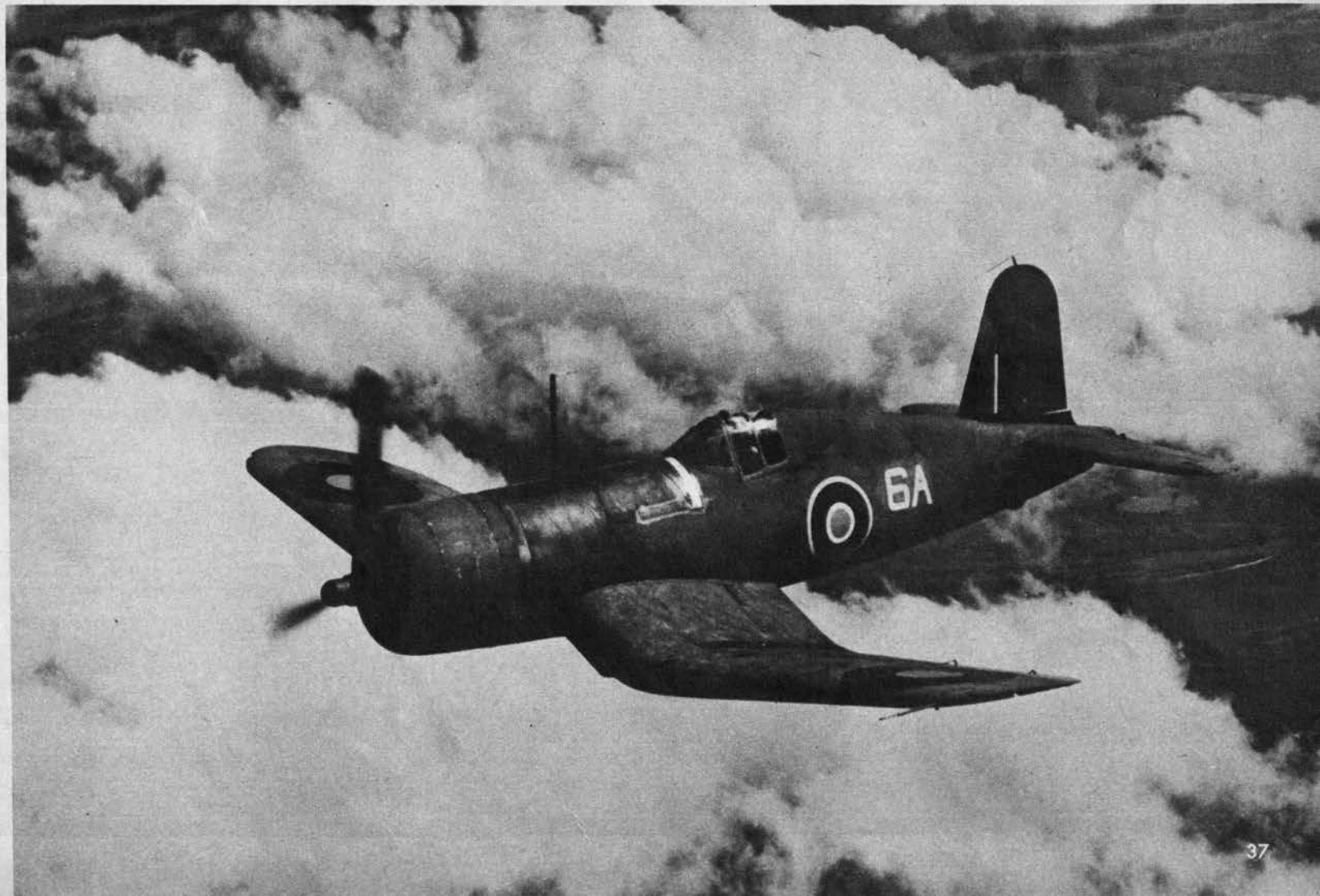
AVENGER Grumman's chunky, deep-bellied torpedo bomber supplements the long, lean Barracuda on British fleet carriers. It is also used to hunt submarines from decks of escort carriers.





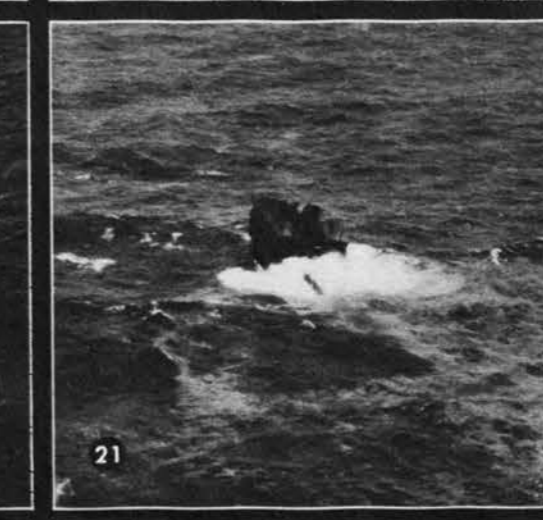
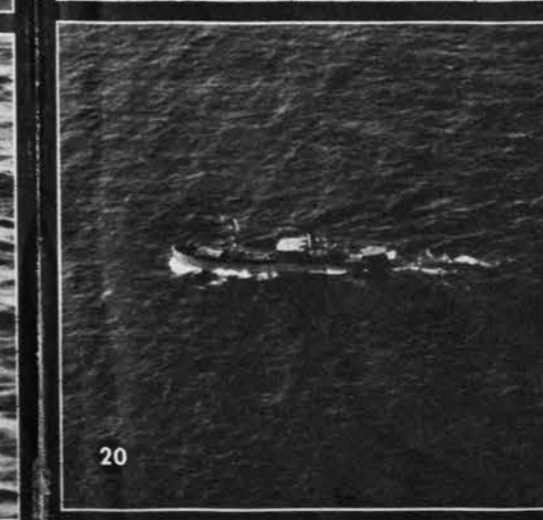
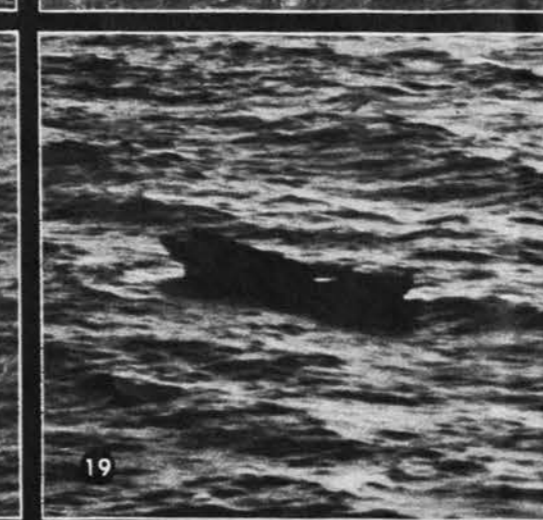
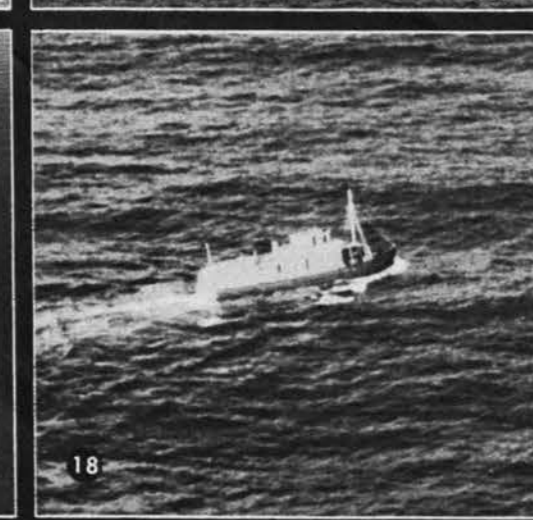
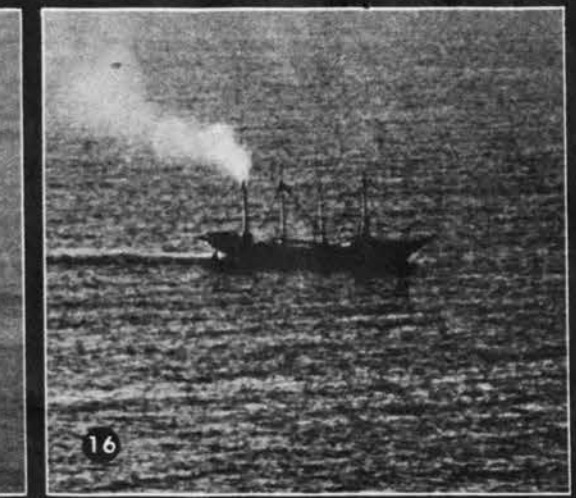
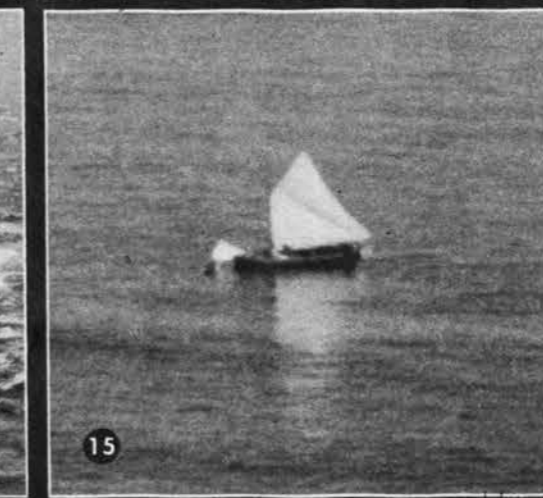
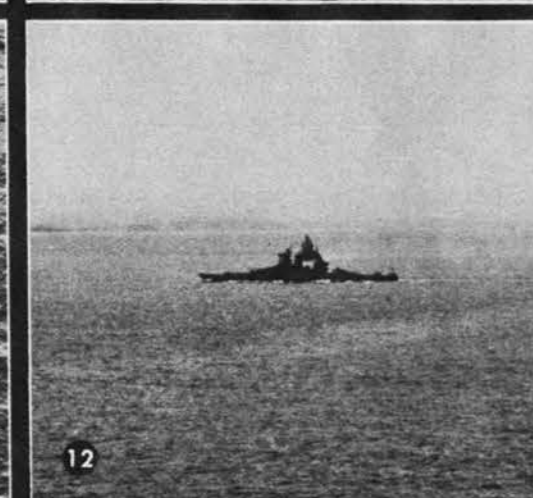
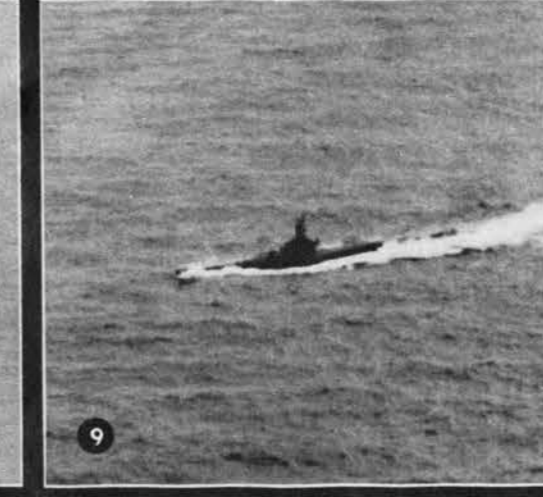
WILDCAT Here patrolling with invasion war paint, the Wildcat has operated from both fleet and escort carriers. A squadron of these planes fought in the Western Desert supporting Army and Navy.

CORSAIR Fourth U. S.-built, British-operated naval plane is the Corsair. A later version, designated the Corsair II, has sharply clipped wingtips which make for easier stowage on carriers.





QUIZ NO. 3: NAVY AIRPLANES ON PATROL AND THE MANY TYPES OF SHIPS THEY SEE



U.S. ARMOR

With new vehicles it is ready for further tests

New weapons, among them the M-24 and M-26 tanks and M-19 and M-36 self-propelled guns, are being moved up to strengthen U. S. armored units. In Europe they should go far to eliminate Germany's superiority in heavy tanks. When turned against the Japanese, the new vehicles should speed our jungle and atoll drives. These new weapons, together with already standard U.S. armored types, are reviewed in this issue.

Except on the Russian fronts, U. S. vehicles now constitute the bulk of all Allied armor. By the summer of 1944 their weight and diversity were sufficient to lead the assault on the French coast. A few months later they blasted a path out of the Cherbourg peninsula, streaked through Brittany and then swept east to the German border in U. S. armor's first real blitz.

The vehicles in this summary are arranged according to their classifications of tank, self-propelled gun, half-track and armored car. This grouping emphasizes total form, essential for open-field recognition. But U. S. soldiers fighting in foxholes and thickly wooded sectors may catch glimpses of a vehicle's chassis when the turret is obscured. For this reason they would do well to know the basic suspensions over which full-tracked U. S. vehicles are built.

Most U. S. tanks and self-propelled guns use the M-4 or M-5 running gear. This is characterized by small bogie wheels suspended in tandem—six on each side for the M-4, four on the M-5. The chassis of these vehicles are relatively high and narrow. In the M-4 group are the Sherman itself, the M-7, M-10, M-12 and M-36. The M-5, M-5A1 and M-8 SP howitzer all have M-5 traction, while that of the airborne M-22 is very similar.

In the more recent designs—M-18 and M-19 gun carriages, M-24 and M-26 tanks—a new trend is shown. With wider tracks, large, singly mounted bogie wheels and small return rollers, their suspensions are modifications of the Christie design. Lower and wider than their predecessors, the new vehicles should be superior for flat country, mud and swampy jungle fighting.



U.S. TROOPS ADVANCE BEHIND SHERMAN TANKS ON INVASION MANEUVERS IN

ENGLAND. THESE M-4'S HAVE THEIR ORIGINAL 75-MM. GUN, HUMPED HULL AND TANDEM BOGIE WHEELS MAKE SHERMAN UNIQUE AMONG WORLD'S TANKS



Pausing on French highway, U. S. troops wait for their artillery to take effect before advancing with their Sherman tank. This rear view shows both the rounded turret and sloping after section of the hull.



Heavy 105-mm. howitzer is one variation in M-4 armament. It requires a heavier gun mantlet than the standard 75 (above). The U. S. Third Army's Shermans used this howitzer in drive across France.



British Shermans rumble across the famous bridge at Nijmegen. Like the tank in the foreground, many of them carry as their main armament a long, high-velocity 17-pounder with a bottlelike muzzle brake.



Third variation in the M-4's armament is a long-barreled 76-mm. cannon with extremely high muzzle velocity. It is supported by a heavy, rectangular gun mantlet. The turret is marked by an overhang at rear.



CHINESE-MANNED COLUMN OF M-5A1'S ROLLS DOWN LEDO ROAD. STANDARD U. S. LIGHT TANK, THE M-5A1 IS A TALL VEHICLE WITH A BOXY TURRET



New light tank is the low, powerful M-24. Its angular turret has a two-inch M-3 mortar, a 75-mm. cannon and two machine guns. The low, wide silhouette and modified Christie suspension are typi-

cal of the latest U. S. armored-vehicle design. Two tons heavier than the standard M-5A1, it has a maximum speed of 35 m.p.h. as compared to the latter's 40. The vehicle at the right is the M-29C Weasel.



Heaviest U. S. tank will be the 42-ton M-26. With heavy armor and a big 90-mm. gun, it should be in approximately same fighting class as Nazi Tiger. Its massive turret sits forward on the low hull.



Vest-pocket M-22 is designed for airborne attack. It weighs eight tons, is 13 feet long and a little over seven feet wide. The hull lines are horizontal. Both the turret and the bow are smoothly rounded.



M-7's line up on a French hillside in preparation for an attack on German positions as M-8 SP howitzers and an M-4 maneuver in the background. The M-7 consists of a 105-mm. howitzer mounted on an M-3

medium tank chassis. The pulpitlike machine-gun mount on the right side has given it the nickname of "Priest." It is one of the few full-tracked U. S. vehicles with an open gun mount rather than a turret.



New anti-aircraft vehicle, the M-19 consists of an open turntable mount set at the rear of an M-24 light tank chassis. Twin 40-mm. Bofors guns can crash shells through armored bellies of low-flying airplanes.



Awaiting orders, the crew of an M-10 get set to roll after the breakthrough beyond St. Lo. Main weapon is a 3-in. gun in a low angular turret mounted on M-4 chassis. Turret has sharply undercut sides.



Hedge near Marigny shelters a row of M-8 self-propelled howitzers as the crews train their stubby 75's on the German defense positions. Fully as fast as the M-5 tank, from which it gets its chassis, the M-8 is

a very mobile short-range assault weapon. The turret's sides curve forward to the extremely heavy gun mantlet. Hedgerow cutters and the AA machine gun can be seen mounted on the nearest vehicle.



Big, rounded turret and long 90-mm. gun mark the new M-36. Identical with the M-10 (*left*) except for the turret and big gun, its heavier armament should make it even more effective as a tank destroyer.



Star performer in France has been the M-18 with its 76-mm. weapon and top speed of 55 m.p.h. It was the first U. S. armored vehicle with the modified Christie running gear (*see M-19 opposite*) to go into action.



Business end of an M-15 points skyward as crew searches for German planes somewhere in Italy. With the entire chassis camouflaged, the vehicle must be recognized by its gun mount with two .50's and a 37.



Square bucket of the M-15 covers the rear section of the half-track chassis and revolves with guns. The bucket is armored on three sides but is cut out in the rear. The chassis is the familiar M-3 half-track.



M-16's gun mount has four .50-caliber machine guns, giving it higher rate of fire than obsolescent M-13. Unlike the M-15, the M-16 has no revolving bucket. The turret mechanism is in a heavy, conical mount.



Angular hood of M-3 half-track chassis can be seen in this close-up view of an M-16. The rear drive has a single bogie carrying four small wheels, a large forward driving sprocket and idler at the rear.



Earliest U.S. tank destroyer was the M-3 half-track with the old field artillery 75-mm. gun. Designated the M-3A1 gun carriage, this vehicle has an open driver's cab and carries a high shield for the gun crew.



Transporting personnel is one of the M-3 half-track's main functions. It can carry a rifle, mortar or machine-gun squad. The ring-mounted MG above the cab identifies this version as the M-3A1 half-track.



M-8 armored car joins U. S. M-4's in shattered French town of Canisy. Fast and maneuverable but lightly armored, it is a much more suitable vehicle for reconnaissance than for open-field infantry support.

Six wheels, four at rear and two in front, drive M-8 at a top speed of 56 m.p.h. Ring mount above 37-mm. gun turret is a widely used battlefield improvisation. A similar car without turret is called M-20.



NEWS & MISCELLANY

NEWS

A long-nosed FW-190 has been encountered by pilots of the Eighth Air Force (see pictures, right). This is an experimental model of Germany's standard fighter fitted with the Jumo-213 inline engine also found on the Ju-188. Another inline model of the FW-190 is powered by the DB-603 and has a Typhoon-type air-scoop beneath the nose. Speed of the new Focke-Wulf version is 440 m. p. h. at 23,000 feet, and its rate of climb 2,000 feet per minute. Length is 32 feet, three feet longer than the standard radial-engine type. Lead weights in the tail offset increased weight forward.

Norm II, high-speed Japanese reconnaissance seaplane, is now in service. Reports indicate it is equipped with dual propellers.

George II is a Jap Navy fighter that has been confused with Tony. An extremely large spinner gives it the superficial appearance of an inline fighter. Other reports indicate George resembles Tojo. Speed may be over 400 m. p. h.

Peggy I is a twin-engine Japanese bomber, believed to be in operation. With a two-ton bomb load, heavy firepower, and a top speed of around 350 m. p. h., Peggy should be the best bomber yet developed by the Japanese Army. Peggy is recognitionally similar to Helen and has an estimated span of 75-77 feet.

Jack II has a service ceiling of 39,600 feet and can climb to 20,000 feet in 5.6 minutes. Kasei-23 engine is rated at 1,875 hp.

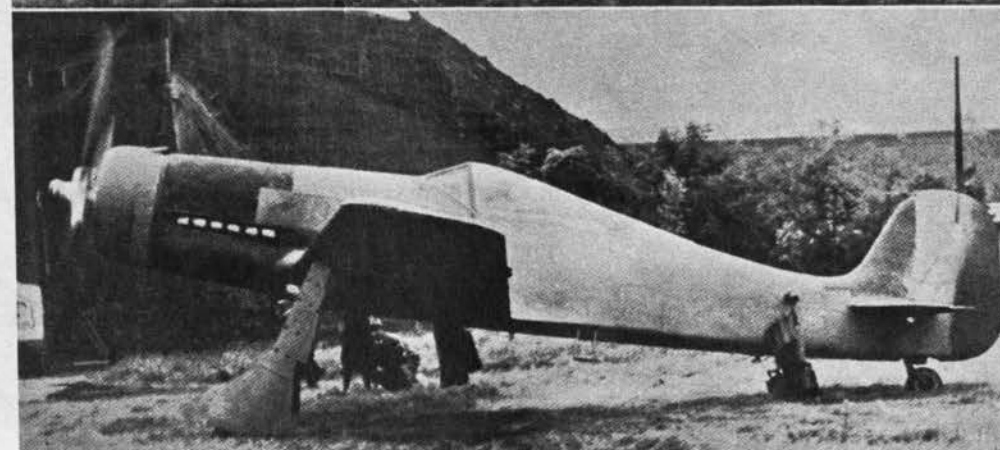
Zekes have been seen with wings painted white from the tips to about eight feet inboard, enclosing the familiar red roundel.

Jap recognition problems include Tony vs. P-40. Reports indicate the Japs have great difficulty in telling friendly from enemy planes.

CORRECTION

In the picture on page 3 of the November *Journal*, the ship in the foreground is the *Enterprise*, not an Essex Class CV.

In Quiz No. 5 of November *Journal*, No. 7 is an SB2C with floats, not Jake.



INLINE-ENGINE FW-190 HAS LONG CYLINDRICAL NOSE, BLUNT, SQUARED-OFF FIN AND RUDDER

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QUIZ ANSWERS

QUIZ NO. 1

1. B-17's
2. SBD's
3. C-47
4. Mosquitoes
5. Beaufighters
6. B-25's
7. Top, Glen; bottom, Petes
8. Emily
9. Nells

QUIZ NO. 2

1. Cromwells and U. S. M-4 (third from right)
2. PzKw VI Tiger
3. U. S. M-4 with 76-mm. gun
4. U. S. M-18
5. PzKw V Panther
6. U. S. M-10
7. U. S. M-8 SP howitzer

QUIZ NO. 3

1. OS2U
2. PV-1
3. PBM
4. PBY
5. Fishing vessel
6. Motor fishing vessel
7. 110-ft. subchaser (U. S.)
8. Fletcher Class DD
9. Submarine (U. S.)
10. Fishing vessel
11. Small engines-aft coastal cargo
12. New Mexico Class BB (2)

13. Tanker
14. 110-ft. subchaser (U. S.)
15. Small pleasure craft
16. Schooner
17. Tanker
18. Motor launch
19. Type "A" Jap landing craft, adrift
20. Small coastal freighter
21. Wrecked tanker
22. Jap DD

QUIZ NO. 4

1. L to R: North Carolina Class BB; Illustrious Class CV; Wichita CA; Southampton Class CA; Kent Class CA; London CA
2. L to R: Tribal Class DD; King George V Class BB; Tribal Class DD
3. LCI's
4. L to R: St. Louis CL; New Orleans Class CA
5. L to R: Malaya BB; South Dakota Class BB (2)

QUIZ NO. 5

1. Mosquito
2. Ju-88
3. Firefly
4. PV-2
5. He-177
6. Me-210
7. DB-3F
8. C-46
9. IL-3
10. L-5
11. Betty 22
12. Frances
13. Barracuda
14. Tempest V
15. B-25

CREDITS

The pictures used in the *Journal*, unless otherwise specified (see below) came from the Allied Armed Services.

3 through 7—B. G. Seielstad

12—Bottom, Press Association

13—Bottom, A. P.

22—Top, George Rodger; second row left, A. P.; third row left, Army Radiotelephoto from Acme; third row right, Press Association; fourth row, Int.

31—Top, A. P.

36—Top, Al Rondey, Grumman Aircraft Eng. Corp.

41—Top, Robert Capa; bottom right; Int.

42—Acme Photo by Frank Cancellare

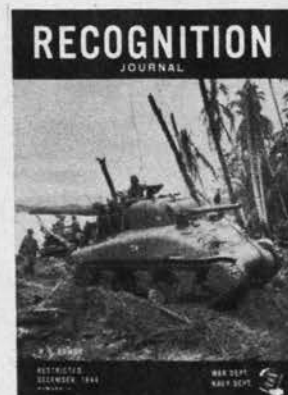
44—Bottom right, Robert Capa

45—Bottom left, Acme

46—Top left, Acme; bottom left, Carl Mydans; bottom right, Frank Scherschel

47—Robert Capa

Abbreviations: A. P., Associated Press; Int., International



A U. S. M-4 tank carrying marksmen clears a way through the jungle for following infantry. This month's cover is an Official Navy Photograph, taken on April 22, 1944 when our forces landed at Humboldt Bay on the coast of New Guinea.

PATROL BOMBER



U. S. A.



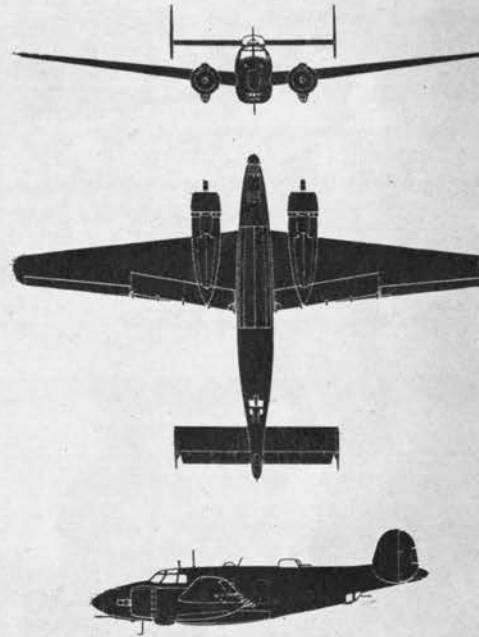
RECOGNITION FEATURES: PV-2 is a twin-engine, mid-wing monoplane. Long wing tapers equally on both edges to bluntly rounded tips and has sharp, even dihedral from the roots. Fowler flap guides form a series of small projections along the wing's trailing edge. Long nacelles are underslung. Fuselage is deep forward, thins out toward slightly upswept tail. Nose is solid, pointed. Rectangular tailplane is set high, and broad rounded fins are flush with tailplane ends. Turret rises abruptly from even dorsal line and belly turret interrupts smooth curve of belly line.

INTEREST: Latest in a series of successful warplanes stemming from the Lockheed 14 commercial transport of prewar days, the PV-2 Harpoon is basically an improved PV-1 Ventura. The new Navy patrol bomber's 10-foot longer span and more rounded wingtips make it more maneuverable, while a redesigned tail assembly provides greater stability. Armament has been increased, with five .50-caliber machine guns mounted in the solid nose, and a power-driven turret carrying two .50's in the belly position. The PV-2's bomb bay is deeper and now will accommodate one torpedo.

NOVEMBER 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-31
NAVY DEPARTMENT BUAE 3

PV-2



SPAN: 75 ft.
LENGTH: 52 ft., 1 in.
APPROX. MAX. SPEED:
SERVICE CEILING:

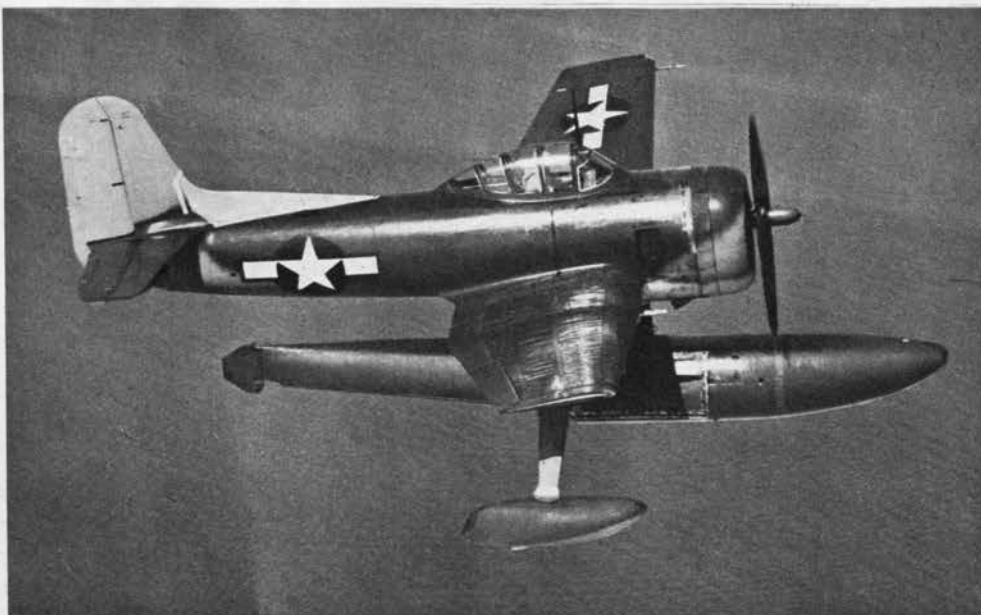
RESTRICTED

NOTE. This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

SCOUT OBSERVATION



U. S. A.



RECOGNITION FEATURES: Single-engine, low-wing monoplane, equipped either with long single float and fixed wing floats, or fixed landing gear. Wing is straight on leading edge and inboard section of trailing edge. Outboard wing panels have distinct dihedral. Central float projects well ahead of the nose, and is attached to fuselage by a single pedestal. Wing floats are attached by single struts. Engine cowling is oval from head-on. Bubble canopy tapers smoothly back into fuselage. Fin and rudder is rather tall and

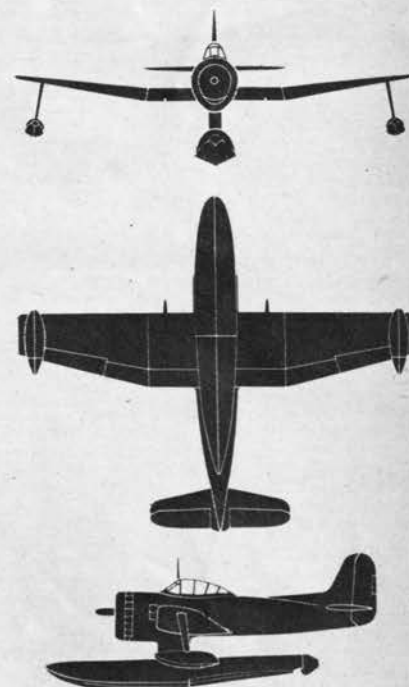
narrow but with extensive forward fairing. Tailplane has blunt tips. Its leading edge is tapered, trailing edge straight with slight projection at the center.

INTEREST: New aerial eye for the U. S. fleet, the SC-1 scout seaplane will gradually replace ageing SOC's and OS2U's. It is intended to operate primarily from the catapults of warships but, like the OS2U, the SC-1 can be fitted with fixed landing gear. Christened Seahawk by the Navy, the new scout is Curtiss-built.

NOVEMBER 1, 1944
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAE 3

SC-1

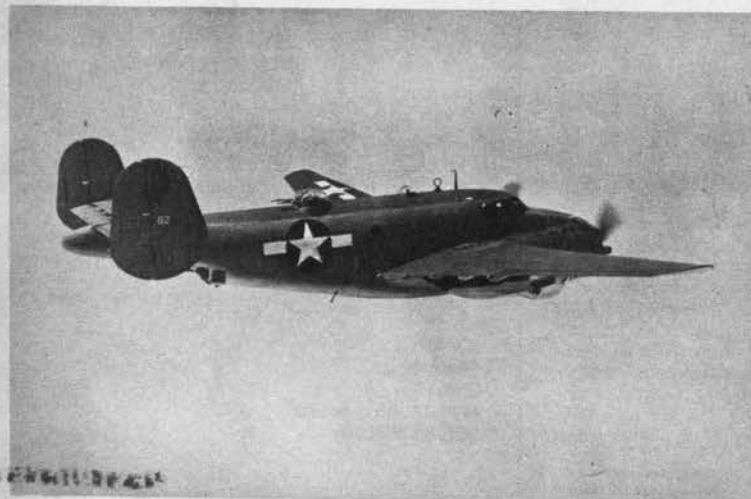
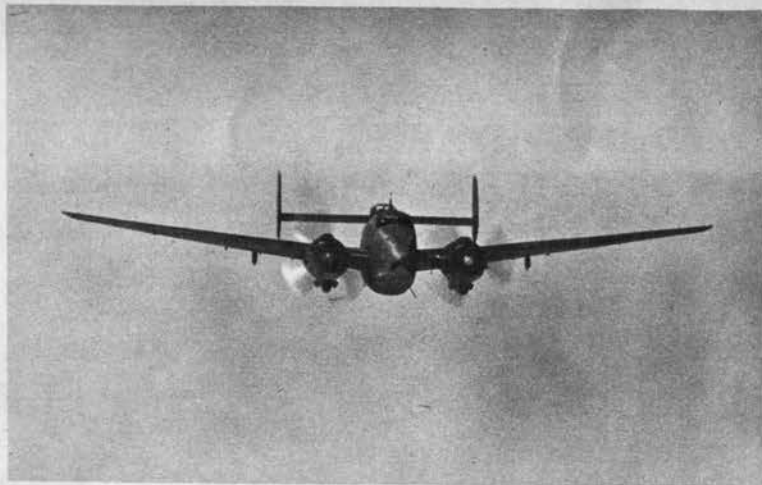


SPAN: 41 ft.
LENGTH: 36 ft., 5 in.
APPROX. MAX. SPEED:
SERVICE CEILING:

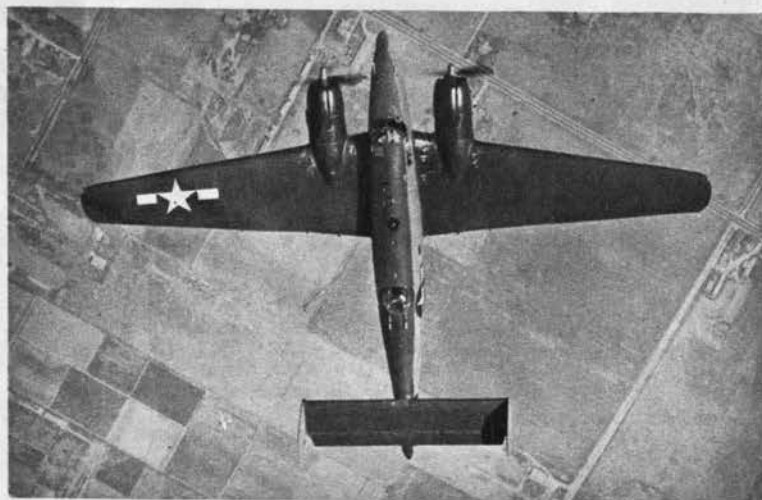
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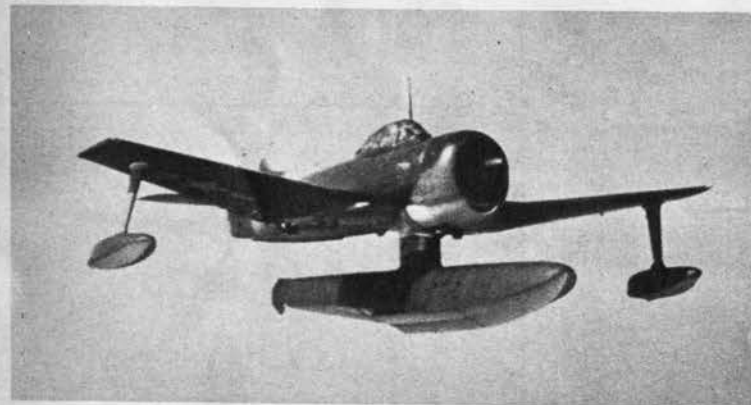


D

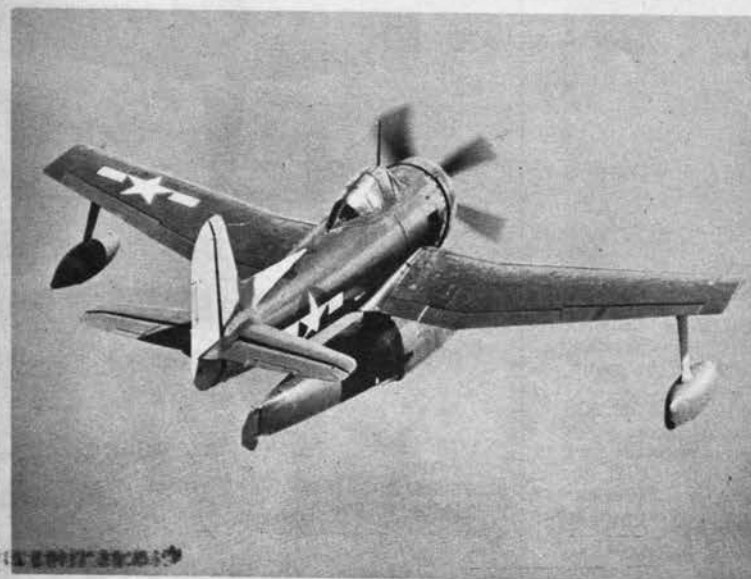
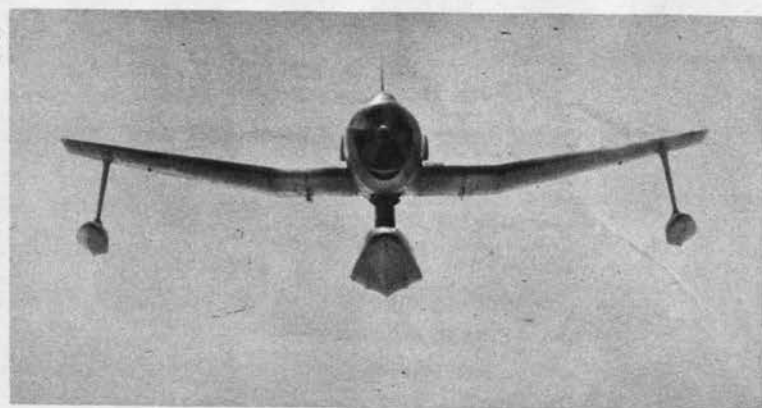


↑ **PV-2** will appear in three models. The C, shown above, was built in limited numbers for training uses. The D, a combat version, will be almost identical except for a more rounded nose. All Harpoons have greater fuel capacity than Ventura.

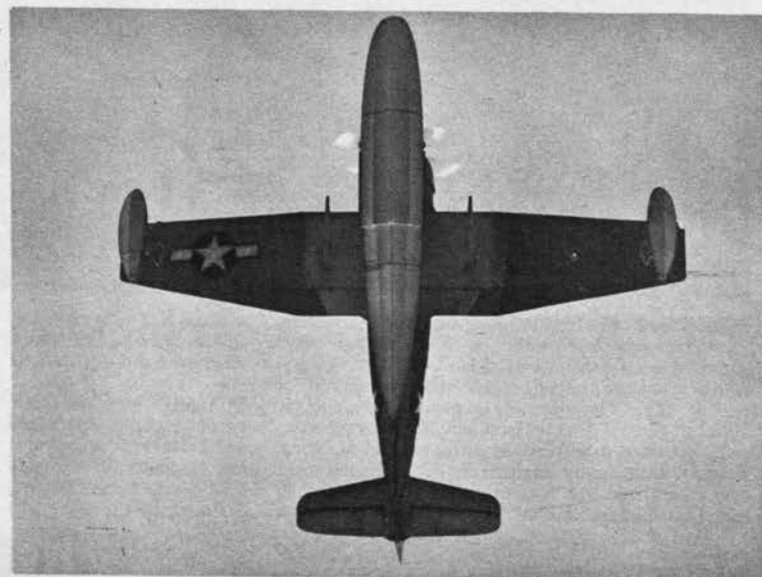
SC-1 Seahawk should substantially increase the speed and range of observation of U.S. BB's and cruisers. High, fighter-type bubble canopy should provide improved visibility over the long greenhouses found on many observation planes. ↓



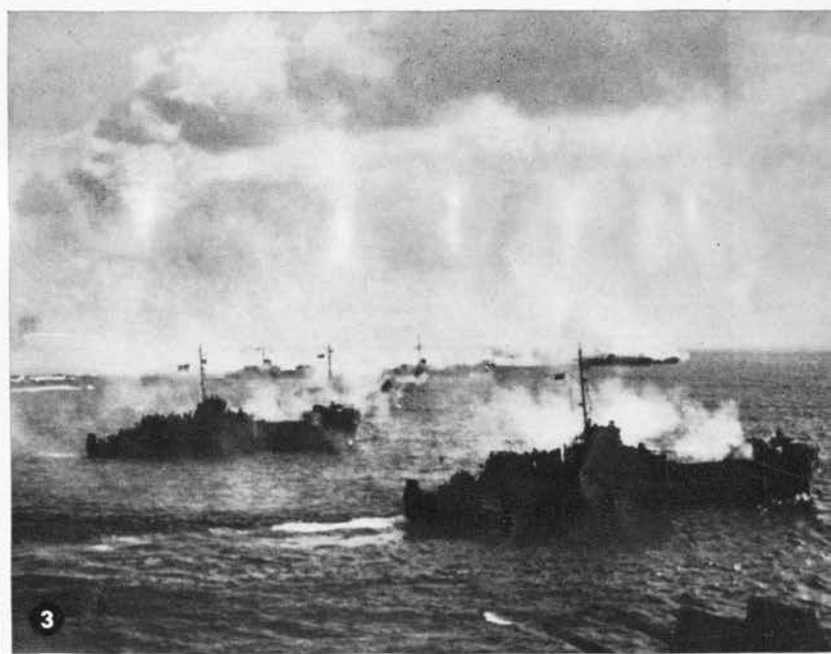
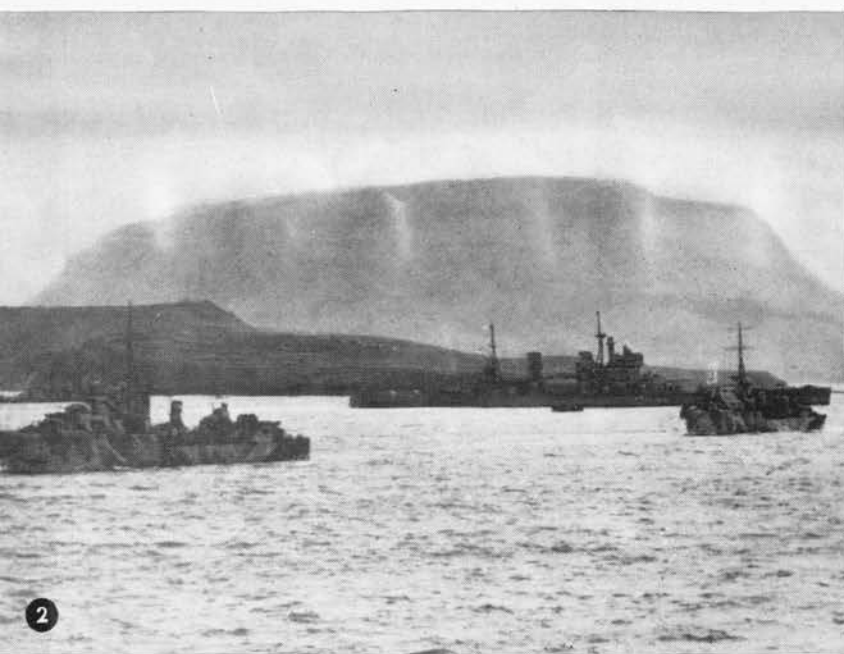
B



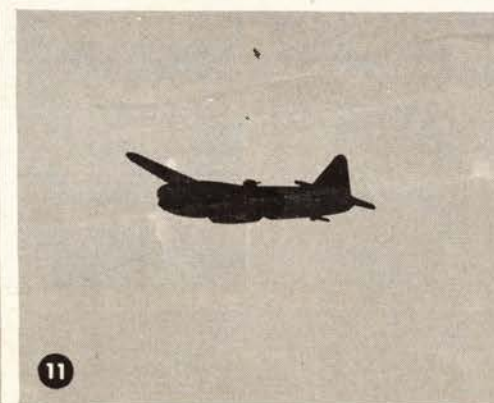
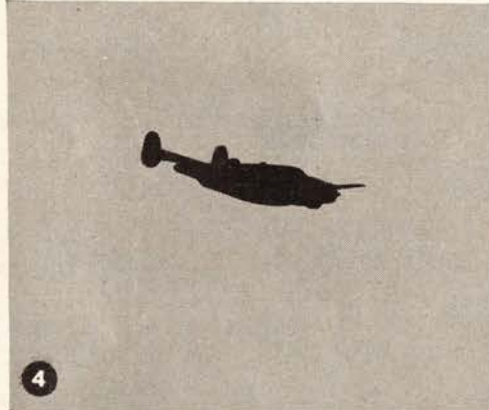
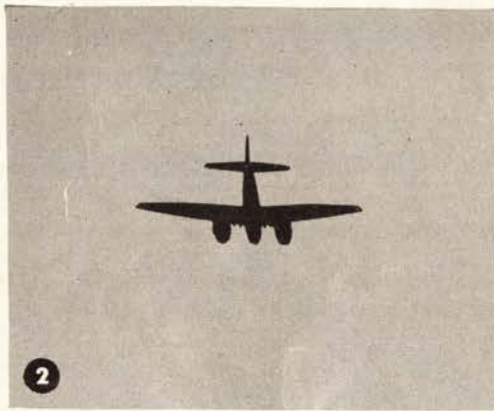
D



QUIZ NO. 4: BRITISH & U. S. SEAPOWER



QUIZ NO. 5: THIS MONTH'S SILLOGRAPHS



For answers see p. 46

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DEC 10 1944